

HP Modular Cooling System G2 Maintenance and Service Guide



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Intended audience

This guide is for an experienced service technician. HP assumes you are qualified in the servicing of computer equipment and trained in recognizing hazards in products with hazardous energy levels and are familiar with weight and stability precautions for rack installations.

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Customer self repair

HP products are designed with many Customer Self Repair (CSR) parts to minimize repair time and allow for greater flexibility in performing defective parts replacement. If during the diagnosis period HP (or HP service providers or service partners) identifies that the repair can be accomplished by the use of a CSR part, HP will ship that part directly to you for replacement. There are two categories of CSR parts:

- **Mandatory**—Parts for which customer self repair is mandatory. If you request HP to replace these parts, you will be charged for the travel and labor costs of this service.
- **Optional**—Parts for which customer self repair is optional. These parts are also designed for customer self repair. If, however, you require that HP replace them for you, there may or may not be additional charges, depending on the type of warranty service designated for your product.

NOTE: Some HP parts are not designed for customer self repair. In order to satisfy the customer warranty, HP requires that an authorized service provider replace the part. These parts are identified as "No" in the Illustrated Parts Catalog.

Based on availability and where geography permits, CSR parts will be shipped for next business day delivery. Same day or four-hour delivery may be offered at an additional charge where geography permits. If assistance is required, you can call the HP Technical Support Center and a technician will help you over the telephone. HP specifies in the materials shipped with a replacement CSR part whether a defective part must be returned to HP. In cases where it is required to return the defective part to HP, you must ship the defective part back to HP within a defined period of time, normally five (5) business days. The defective part must be returned with the associated documentation in the provided shipping material. Failure to return the defective part may result in HP billing you for the replacement. With a customer self repair, HP will pay all shipping and part return costs and determine the courier/carrier to be used.

For more information about HP's Customer Self Repair program, contact your local service provider. For the North American program, refer to the HP website (<http://www.hp.com/go/selfrepair>).

Parts only warranty service

Your HP Limited Warranty may include a parts only warranty service. Under the terms of parts only warranty service, HP will provide replacement parts free of charge.

For parts only warranty service, CSR part replacement is mandatory. If you request HP to replace these parts, you will be charged for the travel and labor costs of this service.

Réparation par le client (CSR)

Les produits HP comportent de nombreuses pièces CSR (Customer Self Repair = réparation par le client) afin de minimiser les délais de réparation et faciliter le remplacement des pièces défectueuses. Si pendant la période de diagnostic, HP (ou ses partenaires ou mainteneurs agréés) détermine que la réparation peut être effectuée à l'aide d'une pièce CSR, HP vous l'envoie directement. Il existe deux catégories de pièces CSR:

Obligatoire - Pièces pour lesquelles la réparation par le client est obligatoire. Si vous demandez à HP de remplacer ces pièces, les coûts de déplacement et main d'œuvre du service vous seront facturés.

Facultatif - Pièces pour lesquelles la réparation par le client est facultative. Ces pièces sont également conçues pour permettre au client d'effectuer lui-même la réparation. Toutefois, si vous demandez à HP de remplacer ces pièces, l'intervention peut ou non vous être facturée, selon le type de garantie applicable à votre produit.

REMARQUE: Certaines pièces HP ne sont pas conçues pour permettre au client d'effectuer lui-même la réparation. Pour que la garantie puisse s'appliquer, HP exige que le remplacement de la pièce soit effectué par un Mainteneur Agréé. Ces pièces sont identifiées par la mention "Non" dans le Catalogue illustré.

Les pièces CSR sont livrées le jour ouvré suivant, dans la limite des stocks disponibles et selon votre situation géographique. Si votre situation géographique le permet et que vous demandez une livraison le jour même ou dans les 4 heures, celle-ci vous sera facturée. Pour bénéficier d'une assistance téléphonique, appelez le Centre d'assistance technique HP. Dans les documents envoyés avec la pièce de rechange CSR, HP précise s'il est nécessaire de lui retourner la pièce défectueuse. Si c'est le cas, vous devez le faire dans le délai indiqué, généralement cinq (5) jours ouvrés. La pièce et sa documentation doivent être retournées dans l'emballage fourni. Si vous ne retournez pas la pièce défectueuse, HP se réserve le droit de vous facturer les coûts de remplacement. Dans le cas d'une pièce CSR, HP supporte l'ensemble des frais d'expédition et de retour, et détermine la société de courses ou le transporteur à utiliser.

Pour plus d'informations sur le programme CSR de HP, contactez votre Mainteneur Agréé local. Pour plus d'informations sur ce programme en Amérique du Nord, consultez le site Web HP (<http://www.hp.com/go/selfrepair>).

Service de garantie "pièces seules"

Votre garantie limitée HP peut inclure un service de garantie "pièces seules". Dans ce cas, les pièces de rechange fournies par HP ne sont pas facturées.

Dans le cadre de ce service, la réparation des pièces CSR par le client est obligatoire. Si vous demandez à HP de remplacer ces pièces, les coûts de déplacement et main d'œuvre du service vous seront facturés.

Riparazione da parte del cliente

Per abbreviare i tempi di riparazione e garantire una maggiore flessibilità nella sostituzione di parti difettose, i prodotti HP sono realizzati con numerosi componenti che possono essere riparati direttamente dal cliente (CSR, Customer Self Repair). Se in fase di diagnostica HP (o un centro di servizi o di assistenza HP) identifica il guasto come riparabile mediante un ricambio CSR, HP lo spedisce direttamente al cliente per la sostituzione. Vi sono due categorie di parti CSR:

Obbligatorie – Parti che devono essere necessariamente riparate dal cliente. Se il cliente ne affida la riparazione ad HP, deve sostenere le spese di spedizione e di manodopera per il servizio.

Opzionali – Parti la cui riparazione da parte del cliente è facoltativa. Si tratta comunque di componenti progettati per questo scopo. Se tuttavia il cliente ne richiede la sostituzione ad HP, potrebbe dover sostenere spese aggiuntive a seconda del tipo di garanzia previsto per il prodotto.

NOTA: alcuni componenti HP non sono progettati per la riparazione da parte del cliente. Per rispettare la garanzia, HP richiede che queste parti siano sostituite da un centro di assistenza autorizzato. Tali parti sono identificate da un "No" nel Catalogo illustrato dei componenti.

In base alla disponibilità e alla località geografica, le parti CSR vengono spedite con consegna entro il giorno lavorativo seguente. La consegna nel giorno stesso o entro quattro ore è offerta con un supplemento di costo solo in alcune zone. In caso di necessità si può richiedere l'assistenza telefonica di un addetto del centro di supporto tecnico HP. Nel materiale fornito con una parte di ricambio CSR, HP specifica se il cliente deve restituire dei componenti. Qualora sia richiesta la resa ad HP del componente difettoso, lo si deve spedire ad HP entro un determinato periodo di tempo, generalmente cinque (5) giorni lavorativi. Il componente difettoso deve essere restituito con la documentazione associata nell'imballo di spedizione fornito. La mancata restituzione del componente può comportare la fatturazione del ricambio da parte di HP. Nel caso di riparazione da parte del cliente, HP sostiene tutte le spese di spedizione e resa e sceglie il corriere/vettore da utilizzare.

Per ulteriori informazioni sul programma CSR di HP contattare il centro di assistenza di zona. Per il programma in Nord America fare riferimento al sito Web HP (<http://www.hp.com/go/selfrepair>).

Servizio di garanzia per i soli componenti

La garanzia limitata HP può includere un servizio di garanzia per i soli componenti. Nei termini di garanzia del servizio per i soli componenti, HP fornirà gratuitamente le parti di ricambio.

Per il servizio di garanzia per i soli componenti è obbligatoria la formula CSR che prevede la riparazione da parte del cliente. Se il cliente invece richiede la sostituzione ad HP, dovrà sostenere le spese di spedizione e di manodopera per il servizio.

Customer Self Repair

HP Produkte enthalten viele CSR-Teile (Customer Self Repair), um Reparaturzeiten zu minimieren und höhere Flexibilität beim Austausch defekter Bauteile zu ermöglichen. Wenn HP (oder ein HP Servicepartner) bei der Diagnose feststellt, dass das Produkt mithilfe eines CSR-Teils repariert werden kann, sendet Ihnen HP dieses Bauteil zum Austausch direkt zu. CSR-Teile werden in zwei Kategorien unterteilt:

Zwingend – Teile, für die das Customer Self Repair-Verfahren zwingend vorgegeben ist. Wenn Sie den Austausch dieser Teile von HP vornehmen lassen, werden Ihnen die Anfahrt- und Arbeitskosten für diesen Service berechnet.

Optional – Teile, für die das Customer Self Repair-Verfahren optional ist. Diese Teile sind auch für Customer Self Repair ausgelegt. Wenn Sie jedoch den Austausch dieser Teile von HP vornehmen lassen möchten, können bei diesem Service je nach den für Ihr Produkt vorgesehenen Garantiebedingungen zusätzliche Kosten anfallen.

HINWEIS: Einige Teile sind nicht für Customer Self Repair ausgelegt. Um den Garantieanspruch des Kunden zu erfüllen, muss das Teil von einem HP Servicepartner ersetzt werden. Im illustrierten Teilekatalog sind diese Teile mit „No“ bzw. „Nein“ gekennzeichnet.

CSR-Teile werden abhängig von der Verfügbarkeit und vom Lieferziel am folgenden Geschäftstag geliefert. Für bestimmte Standorte ist eine Lieferung am selben Tag oder innerhalb von vier Stunden gegen einen Aufpreis verfügbar. Wenn Sie Hilfe benötigen, können Sie das HP technische Support Center

anrufen und sich von einem Mitarbeiter per Telefon helfen lassen. Den Materialien, die mit einem CSR-Ersatzteil geliefert werden, können Sie entnehmen, ob das defekte Teil an HP zurückgeschickt werden muss. Wenn es erforderlich ist, das defekte Teil an HP zurückzuschicken, müssen Sie dies innerhalb eines vorgegebenen Zeitraums tun, in der Regel innerhalb von fünf (5) Geschäftstagen. Das defekte Teil muss mit der zugehörigen Dokumentation in der Verpackung zurückgeschickt werden, die im Lieferumfang enthalten ist. Wenn Sie das defekte Teil nicht zurückschicken, kann HP Ihnen das Ersatzteil in Rechnung stellen. Im Falle von Customer Self Repair kommt HP für alle Kosten für die Lieferung und Rücksendung auf und bestimmt den Kurier-/Frachtdienst.

Weitere Informationen über das HP Customer Self Repair Programm erhalten Sie von Ihrem Servicepartner vor Ort. Informationen über das CSR-Programm in Nordamerika finden Sie auf der HP Website unter (<http://www.hp.com/go/selfrepair>).

Parts-only Warranty Service (Garantieservice ausschließlich für Teile)

Ihre HP Garantie umfasst möglicherweise einen Parts-only Warranty Service (Garantieservice ausschließlich für Teile). Gemäß den Bestimmungen des Parts-only Warranty Service stellt HP Ersatzteile kostenlos zur Verfügung.

Für den Parts-only Warranty Service ist das CSR-Verfahren zwingend vorgegeben. Wenn Sie den Austausch dieser Teile von HP vornehmen lassen, werden Ihnen die Anfahrt- und Arbeitskosten für diesen Service berechnet.

Reparaciones del propio cliente

Los productos de HP incluyen muchos componentes que el propio usuario puede reemplazar (*Customer Self Repair*, CSR) para minimizar el tiempo de reparación y ofrecer una mayor flexibilidad a la hora de realizar sustituciones de componentes defectuosos. Si, durante la fase de diagnóstico, HP (o los proveedores o socios de servicio de HP) identifica que una reparación puede llevarse a cabo mediante el uso de un componente CSR, HP le enviará dicho componente directamente para que realice su sustitución. Los componentes CSR se clasifican en dos categorías:

- **Obligatorio:** componentes para los que la reparación por parte del usuario es obligatoria. Si solicita a HP que realice la sustitución de estos componentes, tendrá que hacerse cargo de los gastos de desplazamiento y de mano de obra de dicho servicio.
- **Opcional:** componentes para los que la reparación por parte del usuario es opcional. Estos componentes también están diseñados para que puedan ser reparados por el usuario. Sin embargo, si precisa que HP realice su sustitución, puede o no conllevar costes adicionales, dependiendo del tipo de servicio de garantía correspondiente al producto.

NOTA: Algunos componentes no están diseñados para que puedan ser reparados por el usuario. Para que el usuario haga valer su garantía, HP pone como condición que un proveedor de servicios autorizado realice la sustitución de estos componentes. Dichos componentes se identifican con la palabra "No" en el catálogo ilustrado de componentes.

Según la disponibilidad y la situación geográfica, los componentes CSR se enviarán para que lleguen a su destino al siguiente día laborable. Si la situación geográfica lo permite, se puede solicitar la entrega en el mismo día o en cuatro horas con un coste adicional. Si precisa asistencia técnica, puede llamar al

Centro de asistencia técnica de HP y recibirá ayuda telefónica por parte de un técnico. Con el envío de materiales para la sustitución de componentes CSR, HP especificará si los componentes defectuosos deberán devolverse a HP. En aquellos casos en los que sea necesario devolver algún componente a HP, deberá hacerlo en el periodo de tiempo especificado, normalmente cinco días laborables. Los componentes defectuosos deberán devolverse con toda la documentación relacionada y con el embalaje de envío. Si no enviara el componente defectuoso requerido, HP podrá cobrarle por el de sustitución. En el caso de todas sustituciones que lleve a cabo el cliente, HP se hará cargo de todos los gastos de envío y devolución de componentes y escogerá la empresa de transporte que se utilice para dicho servicio.

Para obtener más información acerca del programa de Reparaciones del propio cliente de HP, póngase en contacto con su proveedor de servicios local. Si está interesado en el programa para Norteamérica, visite la página web de HP siguiente (<http://www.hp.com/go/selfrepair>).

Servicio de garantía exclusivo de componentes

La garantía limitada de HP puede que incluya un servicio de garantía exclusivo de componentes. Según las condiciones de este servicio exclusivo de componentes, HP le facilitará los componentes de repuesto sin cargo adicional alguno.

Para este servicio de garantía exclusivo de componentes, es obligatoria la sustitución de componentes por parte del usuario (CSR). Si solicita a HP que realice la sustitución de estos componentes, tendrá que hacerse cargo de los gastos de desplazamiento y de mano de obra de dicho servicio.

Customer Self Repair

Veel onderdelen in HP producten zijn door de klant zelf te repareren, waardoor de reparatieduur tot een minimum beperkt kan blijven en de flexibiliteit in het vervangen van defecte onderdelen groter is. Deze onderdelen worden CSR-onderdelen (Customer Self Repair) genoemd. Als HP (of een HP Service Partner) bij de diagnose vaststelt dat de reparatie kan worden uitgevoerd met een CSR-onderdeel, verzendt HP dat onderdeel rechtstreeks naar u, zodat u het defecte onderdeel daarmee kunt vervangen. Er zijn twee categorieën CSR-onderdelen:

Verplicht: Onderdelen waarvoor reparatie door de klant verplicht is. Als u HP verzoekt deze onderdelen voor u te vervangen, worden u voor deze service reiskosten en arbeidsloon in rekening gebracht.

Optioneel: Onderdelen waarvoor reparatie door de klant optioneel is. Ook deze onderdelen zijn ontworpen voor reparatie door de klant. Als u echter HP verzoekt deze onderdelen voor u te vervangen, kunnen daarvoor extra kosten in rekening worden gebracht, afhankelijk van het type garantieservice voor het product.

OPMERKING: Sommige HP onderdelen zijn niet ontwikkeld voor reparatie door de klant. In verband met de garantievooraarden moet het onderdeel door een geautoriseerde Service Partner worden vervangen. Deze onderdelen worden in de geïllustreerde onderdelencatalogus aangemerkt met "Nee".

Afhankelijk van de leverbaarheid en de locatie worden CSR-onderdelen verzonden voor levering op de eerstvolgende werkdag. Levering op dezelfde dag of binnen vier uur kan tegen meerkosten worden aangeboden, indien dit mogelijk is gezien de locatie. Indien assistentie gewenst is, belt u een HP Service Partner om via de telefoon technische ondersteuning te ontvangen. HP vermeldt in de documentatie bij het vervangende CSR-onderdeel of het defecte onderdeel aan HP moet worden geretourneerd. Als het defecte onderdeel aan HP moet worden teruggezonden, moet u het defecte onderdeel binnen een bepaalde periode, gewoonlijk vijf (5) werkdagen, retourneren aan HP. Het defecte onderdeel moet met de

bijbehorende documentatie worden geretourneerd in het meegeleverde verpakkingsmateriaal. Als u het defecte onderdeel niet terugzendt, kan HP u voor het vervangende onderdeel kosten in rekening brengen. Bij reparatie door de klant betaalt HP alle verzendkosten voor het vervangende en geretourneerde onderdeel en kiest HP zelf welke koerier/transportonderneming hiervoor wordt gebruikt.

Neem contact op met een Service Partner voor meer informatie over het Customer Self Repair programma van HP. Informatie over Service Partners vindt u op de HP website (<http://www.hp.com/go/selfrepair>).

Garantieservice "Parts Only"

Het is mogelijk dat de HP garantie alleen de garantieservice "Parts Only" omvat. Volgens de bepalingen van de Parts Only garantieservice zal HP kosteloos vervangende onderdelen ter beschikking stellen.

Voor de Parts Only garantieservice is vervanging door CSR-onderdelen verplicht. Als u HP verzoekt deze onderdelen voor u te vervangen, worden u voor deze service reiskosten en arbeidsloon in rekening gebracht.

Reparo feito pelo cliente

Os produtos da HP são projetados com muitas peças para reparo feito pelo cliente (CSR) de modo a minimizar o tempo de reparo e permitir maior flexibilidade na substituição de peças com defeito. Se, durante o período de diagnóstico, a HP (ou fornecedores/parceiros de serviço da HP) concluir que o reparo pode ser efetuado pelo uso de uma peça CSR, a peça de reposição será enviada diretamente ao cliente. Existem duas categorias de peças CSR:

Obrigatória – Peças cujo reparo feito pelo cliente é obrigatório. Se desejar que a HP substitua essas peças, serão cobradas as despesas de transporte e mão-de-obra do serviço.

Opcional – Peças cujo reparo feito pelo cliente é opcional. Essas peças também são projetadas para o reparo feito pelo cliente. No entanto, se desejar que a HP as substitua, pode haver ou não a cobrança de taxa adicional, dependendo do tipo de serviço de garantia destinado ao produto.

OBSERVAÇÃO: Algumas peças da HP não são projetadas para o reparo feito pelo cliente. A fim de cumprir a garantia do cliente, a HP exige que um técnico autorizado substitua a peça. Essas peças estão identificadas com a marca "No" (Não), no catálogo de peças ilustrado.

Conforme a disponibilidade e o local geográfico, as peças CSR serão enviadas no primeiro dia útil após o pedido. Onde as condições geográficas permitirem, a entrega no mesmo dia ou em quatro horas pode ser feita mediante uma taxa adicional. Se precisar de auxílio, entre em contato com o Centro de suporte técnico da HP para que um técnico o ajude por telefone. A HP especifica nos materiais fornecidos com a peça CSR de reposição se a peça com defeito deve ser devolvida à HP. Nos casos em que isso for necessário, é preciso enviar a peça com defeito à HP dentro do período determinado, normalmente cinco (5) dias úteis. A peça com defeito deve ser enviada com a documentação correspondente no material de transporte fornecido. Caso não o faça, a HP poderá cobrar a reposição. Para as peças de reparo feito pelo cliente, a HP paga todas as despesas de transporte e de devolução da peça e determina a transportadora/serviço postal a ser utilizado.

Para obter mais informações sobre o programa de reparo feito pelo cliente da HP, entre em contato com o fornecedor de serviços local. Para o programa norte-americano, visite o site da HP (<http://www.hp.com/go/selfrepair>).

Serviço de garantia apenas para peças

A garantia limitada da HP pode incluir um serviço de garantia apenas para peças. Segundo os termos do serviço de garantia apenas para peças, a HP fornece as peças de reposição sem cobrar nenhuma taxa.

No caso desse serviço, a substituição de peças CSR é obrigatória. Se desejar que a HP substitua essas peças, serão cobradas as despesas de transporte e mão-de-obra do serviço.

顧客自己修理保証サービス

修理時間を短縮し、故障部品の交換における高い柔軟性を確保するために、HP製品には多数の顧客自己修理（CSR）部品があります。診断の際に、CSR部品を使用すれば修理ができるとHP（HPまたはHP正規保守代理店）が判断した場合、HPはその部品を直接、お客様に発送し、お客様に交換していただきます。CSR部品には以下の2通りがあります。

- 必須 - 顧客自己修理が必須の部品。当該部品について、もしもお客様がHPに交換作業を依頼される場合には、その修理サービスに関する交通費および人件費がお客様に請求されます。
- 任意 - 顧客自己修理が任意である部品。この部品も顧客自己修理用です。当該部品について、もしもお客様がHPに交換作業を依頼される場合には、お買い上げの製品に適用される保証サービス内容の範囲内においては、別途費用を負担していただくことなく保証サービスを受けることができます。

注： HP製品の一部の部品は、顧客自己修理用ではありません。製品の保証を継続するためには、HPまたはHP正規保守代理店による交換作業が必須となります。部品カタログには、当該部品が顧客自己修理除外品である旨が記載されています。

部品供給が可能な場合、地域によっては、CSR部品を翌営業日に届くように発送します。また、地域によっては、追加費用を負担いただくことにより同日または4時間以内に届くように発送することも可能な場合があります。サポートが必要なときは、HPの修理受付窓口にご連絡いただければ、技術者が電話でアドバイスします。交換用のCSR部品または同梱物には、故障部品をHPに返送する必要があるかどうかが表示されています。故障部品をHPに返送する必要がある場合は、指定期限内（通常は5営業日以内）に故障部品をHPに返送してください。故障部品を返送する場合は、届いた時の梱包箱に関連書類とともに入れてください。故障部品を返送しない場合、HPから部品費用が請求されます。顧客自己修理の際には、HPは送料および部品返送費を全額負担し、使用する宅配便会社や運送会社を指定します。

部品のみ保証サービス

HP保証サービスには、部品のみ保証サービスが適用される場合があります。このサービスでは、交換部品は無償で提供されます。

部品のみ保証サービスにおいては、CSR部品をお客様により交換作業していただくことが必須となります。当該部品について、もしもお客様がHPに交換作業を依頼される場合には、その修理サービスに関する交通費および人件費はお客様の負担となります。

客户自行维修

HP 产品提供许多客户自行维修 (CSR) 部件，以尽可能缩短维修时间和在更换缺陷部件方面提供更大的灵活性。如果在诊断期间 HP（或 HP 服务提供商或服务合作伙伴）确定可以通过使用 CSR 部件完成维修，HP 将直接把该部件发送给您进行更换。有两类 CSR 部件：

- **强制性的** — 要求客户必须自行维修的部件。如果您请求 HP 更换这些部件，则必须为该服务支付差旅费和人工费用。
- **可选的** — 客户可以选择是否自行维修的部件。这些部件也是为客户自行维修设计的。不过，如果您要求 HP 为您更换这些部件，则根据为您的产品指定的保修服务类型，HP 可能收取或不再收取任何附加费用。

注：某些 HP 部件的设计并未考虑客户自行维修。为了满足客户保修的需要，HP 要求授权服务提供商更换相关部件。这些部件在部件图解目录中标记为“否”。

CSR 部件将在下一个工作日发运（取决于备货情况和允许的地理范围）。在允许的地理范围内，可在当天或四小时内发运，但要收取额外费用。如果需要帮助，您可以致电 HP 技术支持中心，将会有技术人员通过电话为您提供帮助。HP 会在随更换的 CSR 部件发运的材料中指明是否必须将有缺陷的部件返还给 HP。如果要求您将有缺陷的部件返还给 HP，那么您必须在规定期限内（通常是五 (5) 个工作日）将缺陷部件发给 HP。有缺陷的部件必须随所提供的发运材料中的相关文件一起返还。如果未能送还有缺陷的部件，HP 可能会要求您支付更换费用。客户自行维修时，HP 将承担所有相关运输和部件返回费用，并指定快递商/承运商。

有关 HP 客户自行维修计划的详细信息，请与您当地的服务提供商联系。有关北美地区的计划，请访问 HP 网站 (<http://www.hp.com/go/selfrepair>)。

仅部件保修服务

您的 HP 有限保修服务可能涉及仅部件保修服务。根据仅部件保修服务条款的规定，HP 将免费提供更换的部件。

仅部件保修服务要求进行 CSR 部件更换。如果您请求 HP 更换这些部件，则必须为该服务支付差旅费和人工费用。

客戶自行維修

HP 產品設計了許多「客戶自行維修」(CSR) 的零件以減少維修時間，並且使得更換瑕疵零件時能有更大的彈性。如果在診斷期間 HP（或 HP 服務供應商或維修夥伴）辨認出此項維修工作可以藉由使用 CSR 零件來完成，則 HP 將直接寄送該零件給您作更換。CSR 零件分為兩種類別：

- **強制的** — 客戶自行維修所使用的零件是強制性的。如果您要求 HP 更換這些零件，HP 將會向您收取此服務所需的外出費用與勞動成本。
- **選購的** — 客戶自行維修所使用的零件是選購的。這些零件也設計用於客戶自行維修之用。不過，如果您要求 HP 為您更換，則可能需要也可能不需要負擔額外的費用，端視針對此產品指定的保固服務類型而定。

備註：某些 HP 零件沒有消費者可自行維修的設計。為符合客戶保固，HP 需要授權的服務供應商更換零件。這些零件在圖示的零件目錄中，被標示為「否」。

基於材料取得及環境允許的情況下，CSR 零件將於下一個工作日以快遞寄送。在環境的允許下當天或四小時內送達，則可能需要額外的費用。若您需要協助，可致電「HP 技術支援中心」，會有一位技術人員透過電話來協助您。不論損壞的零件是否必須退回，HP 皆會在與 CSR 替換零件一起運送的材料中註明。若要將損壞的零件退回 HP，您必須在指定的一段時間內（通常為五 (5) 個工作天），將損壞的零件寄回 HP。損壞的零件必須與寄送資料中隨附的相關技術文件一併退還。如果無法退還損壞的零件，HP 可能要向您收取替換費用。針對客戶自行維修情形，HP 將負責所有運費及零件退還費用並指定使用何家快遞/貨運公司。

如需 HP 的「客戶自行維修」方案詳細資訊，請連絡您當地的服務供應商。至於北美方案，請參閱 HP 網站 (<http://www.hp.com/go/selfrepair>)。

僅限零件的保固服務

您的「HP 有限保固」可能包含僅限零件的保固服務。在僅限零件的保固服務情況下，HP 將免費提供替換零件。

針對僅限零件的保固服務，CSR 零件替換是強制性的。如果您要求 HP 更換這些零件，HP 將會向您收取此服務所需的外出費用與勞動成本。

고객 셀프 수리

HP 제품은 수리 시간을 최소화하고 결함이 있는 부품 교체 시 더욱 융통성을 발휘할 수 있도록 하기 위해 고객 셀프 수리(CSR) 부품을 다량 사용하여 설계되었습니다. 진단 기간 동안 HP(또는 HP 서비스 공급업체 또는 서비스 협력업체)에서 CSR 부품을 사용하여 수리가 가능하다고 판단되면 HP는 해당 부품을 바로 사용자에게 보내어 사용자가 교체할 수 있도록 합니다. CSR 부품에는 두 가지 종류가 있습니다.

- **고객 셀프 수리가 의무 사항인 필수 부품.** 사용자가 HP에 이 부품의 교체를 요청할 경우 이 서비스에 대한 출장비 및 작업비가 청구됩니다.
- **고객 셀프 수리가 선택 사항인 부품.** 이 부품들도 고객 셀프 수리가 가능하도록 설계되었습니다. 하지만 사용자가 HP에 이 부품의 교체를 요청할 경우 사용자가 구입한 제품에 해당하는 보증 서비스 유형에 따라 추가 비용 없이 교체가 가능할 수 있습니다.

참고: 일부 HP 부품은 고객 셀프 수리가 불가능하도록 설계되었습니다. HP는 만족스러운 고객 보증을 위해 공인 서비스 제공업체를 통해 부품을 교체하도록 하고 있습니다. 이러한 부품들은 Illustrated Parts Catalog에 "No"라고 표시되어 있습니다.

CSR 부품은 재고 상태와 지리적 조건이 허용하는 경우 다음 영업일 납품이 가능하도록 배송이 이루어집니다. 지리적 조건이 허용하는 경우 추가 비용이 청구되는 조건으로 당일 또는 4시간 배송이 가능할 수도 있습니다. 도움이 필요하시면 HP 기술 지원 센터로 전화하십시오. 전문 기술자가 전화로 도움을 줄 것입니다. HP는 결함이 발생한 부품을 HP로 반환해야 하는지 여부를 CSR 교체 부품과 함께 배송된 자료에 지정합니다. 결함이 발생한 부품을 HP로 반환해야 하는 경우에는 지정된 기간 내(통상 영업일 기준 5일)에 HP로 반환해야 합니다. 이 때 결함이 발생한 부품은 제공된 포장 재료에 넣어 관련 설명서와 함께 반환해야 합니다. 결함이 발생한 부품을 반환하지 않는 경우 HP가 교체 부품에 대해 비용을 청구할 수 있습니다. 고객 셀프 수리의 경우, HP는 모든 운송 및 부품 반환 비용을 부담하며 이용할 운송업체 및 택배 서비스를 결정합니다.

HP 고객 셀프 수리 프로그램에 대한 자세한 내용은 가까운 서비스 제공업체에 문의하십시오. 북미 지역의 프로그램에 대해서는 HP 웹 사이트(<http://www.hp.com/go/selfrepair>)를 참조하십시오.

부품 제공 보증 서비스

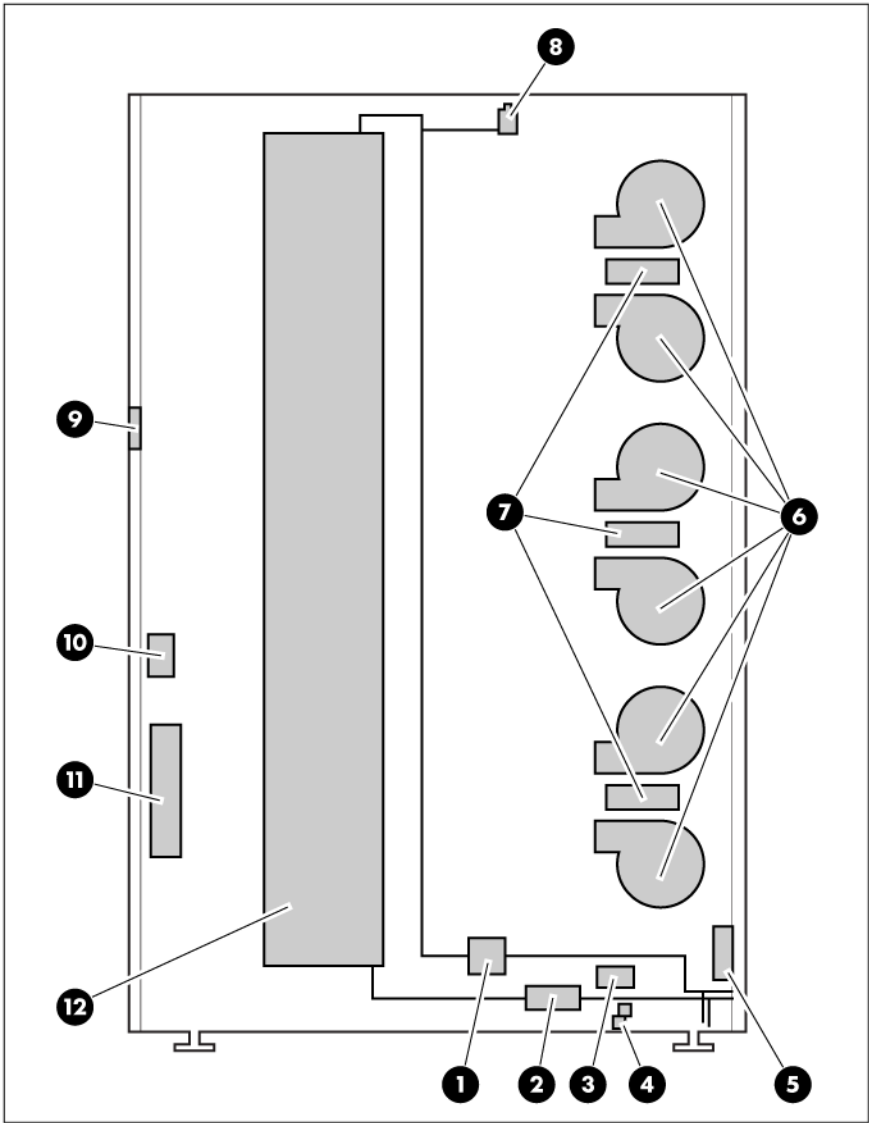
HP 제한 보증에는 부품 제공 보증 서비스가 포함될 수 있습니다. 이러한 경우 HP는 부품 제공 보증 서비스의 조건에 따라 교체 부품만을 무료로 제공합니다.

부품 제공 보증 서비스 제공 시 CSR 부품 교체는 의무 사항입니다. 사용자가 HP에 이 부품의 교체를 요청할 경우 이 서비스에 대한 출장비 및 작업비가 청구됩니다.

Illustrated parts catalog

Replaceable spare parts

The replaceable spare parts for the HP Modular Cooling System G2 unit are listed in the following table.



Item	Description	Spare part number	Customer self repair
1	SPS-FLOWMETER, REPAIR, MCS-G2	463364-001	Optional ²
2	SPS-VALVE, VARIABLE, MCS-G2	463360-001	No ³
3	SPS-PUMP, CONDENSATION, MCS-G2	463361-001	Optional ²
4	SPS-SENSORS, LEVEL, WATER, MCS-G2	463366-001	Optional ²

Item	Description	Spare part number	Customer self repair
5	SPS-CONTROL, WATER, GRP, MCS-G2	463359-001	Optional ²
6	SPS-FAN, MAIN, MCS-G2	463362-001	Optional ²
7	SPS-CONTROLLER, FAN, MCS-G2	468279-001	Optional ²
8	SPS-AIR BLEEDER, MCS-G2	463367-001	Optional ²
9	SPS-DISPLAY, OPERATOR, MCS-G2	463355-001	Optional ²
10	SPS-MANAGEMENT MODULE, MCS-G2	463357-001	Optional ²
11	SPS-TRANSFER SWITCH, AC, MCS-G2	463358-001	Optional ²
12	SPS-WHOLE MCS UNIT, MCS-G2	463356-001	Optional ²
*	SPS-KIT, DOOR RELEASE	463365-001	Optional ²
*	SPS-HOOKUP KIT MCS G2**	611040-001	Optional ²
*	SPS-ELECTRICAL HOOKUP, MCS-G2***	463369-001	Optional ²

*Not shown

**The Main hose kit contains the hardware required to repair the main hoses. For more information, see the *HP Modular Cooling System Hook-Up Kit Installation Instructions*.

***The Electrical kit contains replacement power and network cables.

¹Mandatory—Parts for which customer self repair is mandatory. If you request HP to replace these parts, you will be charged for the travel and labor costs of this service.

²Optional—Parts for which customer self repair is optional. These parts are also designed for customer self repair. If, however, you require that HP replace them for you, there may or may not be additional charges, depending on the type of warranty service designated for your product.

³No—Some HP parts are not designed for customer self repair. In order to satisfy the customer warranty, HP requires that an authorized service provider replace the part. These parts are identified as "No" in the Illustrated Parts Catalog.

¹Mandatory: Obligatoire—Pièces pour lesquelles la réparation par le client est obligatoire. Si vous demandez à HP de remplacer ces pièces, les coûts de déplacement et main d'œuvre du service vous seront facturés.

²Optional: Facultatif—Pièces pour lesquelles la réparation par le client est facultative. Ces pièces sont également conçues pour permettre au client d'effectuer lui-même la réparation. Toutefois, si vous demandez à HP de remplacer ces pièces, l'intervention peut ou non vous être facturée, selon le type de garantie applicable à votre produit.

³No: Non—Certaines pièces HP ne sont pas conçues pour permettre au client d'effectuer lui-même la réparation. Pour que la garantie puisse s'appliquer, HP exige que le remplacement de la pièce soit effectué par un Mainteneur Agréé. Ces pièces sont identifiées par la mention "Non" dans le Catalogue illustré.

¹Mandatory: Obbligatorio—Parti che devono essere necessariamente riparate dal cliente. Se il cliente ne affida la riparazione ad HP, deve sostenere le spese di spedizione e di manodopera per il servizio.

²Optional: Opzionali—Parti la cui riparazione da parte del cliente è facoltativa. Si tratta comunque di componenti progettati per questo scopo. Se tuttavia il cliente ne richiede la sostituzione ad HP, potrebbe dover sostenere spese aggiuntive a seconda del tipo di garanzia previsto per il prodotto.

³No: Non CSR—Alcuni componenti HP non sono progettati per la riparazione da parte del cliente. Per rispettare la garanzia, HP richiede che queste parti siano sostituite da un centro di assistenza autorizzato. Tali parti sono identificate da un "No" nel Catalogo illustrato dei componenti.

¹Mandatory: Zwingend—Teile, die im Rahmen des Customer Self Repair Programms ersetzt werden müssen. Wenn Sie diese Teile von HP ersetzen lassen, werden Ihnen die Versand- und Arbeitskosten für diesen Service berechnet.

²Optional: Optional—Teile, für die das Customer Self Repair-Verfahren optional ist. Diese Teile sind auch für Customer Self Repair ausgelegt. Wenn Sie jedoch den Austausch dieser Teile von HP vornehmen lassen möchten, können bei diesem Service je nach den für Ihr Produkt vorgesehenen Garantiebedingungen zusätzliche Kosten anfallen.

³No: Kein—Einige Teile sind nicht für Customer Self Repair ausgelegt. Um den Garantieanspruch des Kunden zu erfüllen, muss das Teil von einem HP Servicepartner ersetzt werden. Im illustrierten Teilekatalog sind diese Teile mit „No“ bzw. „Nein“ gekennzeichnet.

¹Mandatory: Obligatorio—componentes para los que la reparación por parte del usuario es obligatoria. Si solicita a HP que realice la sustitución de estos componentes, tendrá que hacerse cargo de los gastos de desplazamiento y de mano de obra de dicho servicio.

²Optional: Opcional—componentes para los que la reparación por parte del usuario es opcional. Estos componentes también están diseñados para que puedan ser reparados por el usuario. Sin embargo, si precisa que HP realice su sustitución, puede o no conllevar costes adicionales, dependiendo del tipo de servicio de garantía correspondiente al producto.

³No: No—Algunos componentes no están diseñados para que puedan ser reparados por el usuario. Para que el usuario haga valer su garantía, HP pone como condición que un proveedor de servicios autorizado realice la sustitución de estos componentes. Dichos componentes se identifican con la palabra “No” en el catálogo ilustrado de componentes.

¹Mandatory: Verplicht—Onderdelen waarvoor Customer Self Repair verplicht is. Als u HP verzoekt deze onderdelen te vervangen, komen de reiskosten en het arbeidsloon voor uw rekening.

²Optional: Optioneel—Onderdelen waarvoor reparatie door de klant optioneel is. Ook deze onderdelen zijn ontworpen voor reparatie door de klant. Als u echter HP verzoekt deze onderdelen voor u te vervangen, kunnen daarvoor extra kosten in rekening worden gebracht, afhankelijk van het type garantieservice voor het product.

³No: Nee—Sommige HP onderdelen zijn niet ontwikkeld voor reparatie door de klant. In verband met de garantievoorwaarden moet het onderdeel door een geautoriseerde Service Partner worden vervangen. Deze onderdelen worden in de geïllustreerde onderdelencatalogus aangemerkt met "Nee".

¹Mandatory: Obrigatória—Peças cujo reparo feito pelo cliente é obrigatório. Se desejar que a HP substitua essas peças, serão cobradas as despesas de transporte e mão-de-obra do serviço.

²Optional: Opcional—Peças cujo reparo feito pelo cliente é opcional. Essas peças também são projetadas para o reparo feito pelo cliente. No entanto, se desejar que a HP as substitua, pode haver ou não a cobrança de taxa adicional, dependendo do tipo de serviço de garantia destinado ao produto.

³No: Nenhuma—Algumas peças da HP não são projetadas para o reparo feito pelo cliente. A fim de cumprir a garantia do cliente, a HP exige que um técnico autorizado substitua a peça. Essas peças estão identificadas com a marca “No” (Não), no catálogo de peças ilustrado.

¹Mandatory: 必須 - 顧客自己修理が必須の部品。当該部品について、もしもお客様がHPに交換作業を依頼される場合には、その修理サービスに関する交通費および人件費がお客様に請求されます。

²Optional: 任意 - 顧客自己修理が任意である部品。この部品も顧客自己修理用です。当該部品について、もしもお客様がHPに交換作業を依頼される場合には、お買い上げの製品に適用される保証サービス内容の範囲内においては、費用を負担していただくことなく保証サービスを受けることができます。

³No: 除外 - HP製品の一部の部品は、顧客自己修理用ではありません。製品の保証を継続するためには、HPまたはHP正規保守代理店による交換作業が必須となります。部品カタログには、当該部品が顧客自己修理除外品である旨が記載されています。

¹Mandatory: 强制性的 — 要求客户必须自行维修的部件。如果您请求 HP 更换这些部件，则必须为该服务支付差旅费和人工费用。

²Optional: 可选的 — 客户可以选择是否自行维修的部件。这些部件也是为客户自行维修设计的。不过，如果您要求 HP 为您更换这些部件，则根据为您的产品指定的保修服务类型，HP 可能收取或不再收取任何附加费用。

³No: 否 — 某些 HP 部件的设计并未考虑客户自行维修。为了满足客户保修的需要，HP 要求授权服务提供商更换相关部件。这些部件在部件图解目录中标记为“否”。

¹Mandatory: 强制的 — 客户自行维修所使用的零件是强制性的。如果您要求 HP 更换这些零件，HP 将会向您收取此服务所需的外出费用与劳动成本。

²Optional: 選購的 — 客户自行维修所使用的零件是選購的。這些零件也設計用於客戶自行維修之用。不過，如果您要求 HP 為您更換，則可能需要也可能不需要負擔額外的費用，端視針對此產品指定的保固服務類型而定。

³No: 否 — 某些 HP 零件沒有消費者可自行維修的設計。為符合客戶保固，HP 需要授權的服務供應商更換零件。這些零件在圖示的零件目錄中，被標示為「否」。

¹ Mandatory: 필수 — 고객 셀프 수리가 의무 사항인 필수 부품. 사용자가 HP에 이 부품의 교체를 요청할 경우 이 서비스에 대한 출장비 및 작업비가 청구됩니다.

² Optional: 옵션 — 고객 셀프 수리가 선택 사항인 부품. 이 부품들도 고객 셀프 수리가 가능하도록 설계되었습니다. 하지만 사용자가 HP에 이 부품의 교체를 요청할 경우 사용자가 구입한 제품에 해당하는 보증 서비스 유형에 따라 추가 비용 없이 교체가 가능할 수 있습니다.

³ No: No — 고객 셀프 수리가 불가능하도록 설계된 HP 부품. 이 부품들은 고객 셀프 수리가 불가능하도록 설계되었습니다. HP는 고객 보증을 만족시키기 위해 공인 서비스 제공업체를 통해 부품을 교체하도록 하고 있습니다.

Removal and replacement procedures

Overview

This document provides instructions for removing and replacing the HP Modular Cooling System G2 (MCS G2) spare parts.

Follow the instructions to ensure proper replacement of spare parts.

Spare replacement tips

The following tips might ease the removal and replacement of spare parts:

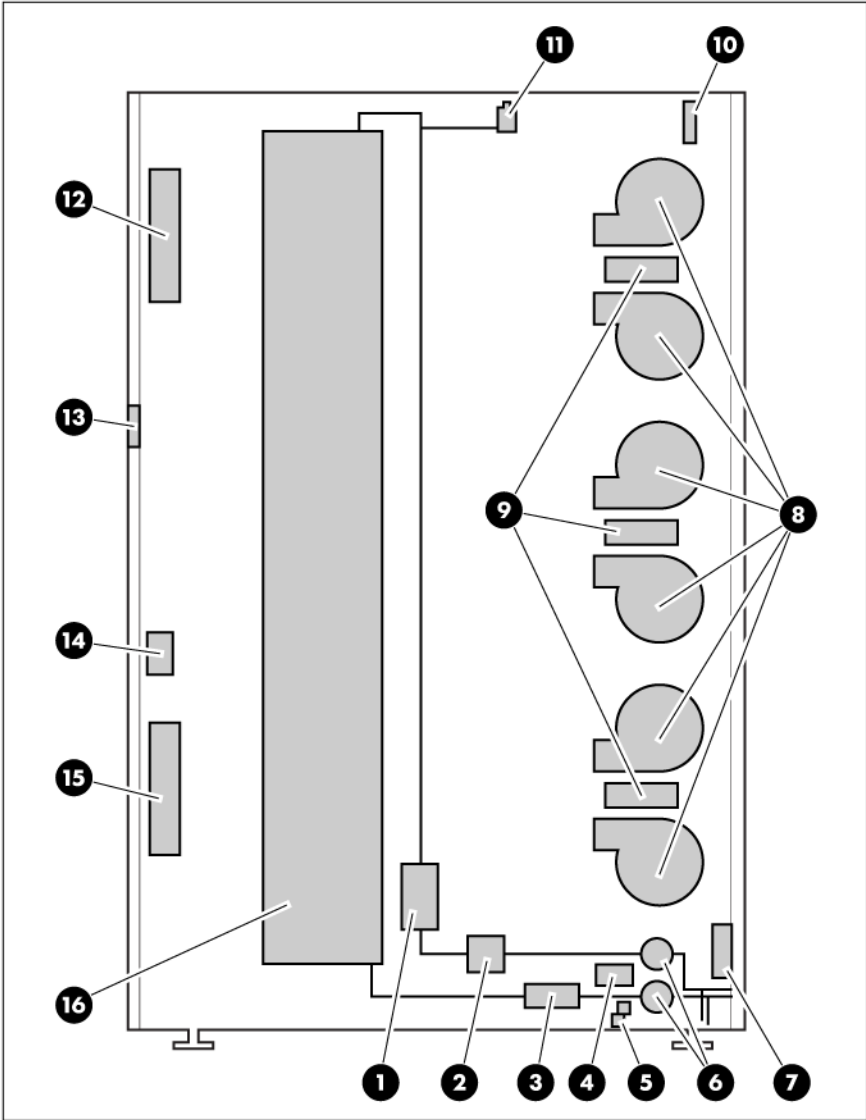
- Take note of the orientation and location of the parts as you remove them. It will help you properly replace the spare parts.
- Retain all of the screws you remove, separated by screw type, because you will need the screws to replace the spare part.

Spare replacement video

Because of the difficulty of removing and replacing spare parts, HP recommends watching the HP Modular Cooling System G2 Spare Replacement video. This video provides a demonstration of replacement strategies and techniques that might be helpful when attempting to remove and replace spare parts. You can access the video on the HP website (<http://www.hp.com/go/MCSG2>).

Component location

The following figure provides an overall layout of the HP Modular Cooling System G2 unit components.



Callout	Component
1	Check valve
2	Flow meter sensor
3	Water valve
4	Condensation pump
5	Water level sensors
6	Water temperature sensors
7	Water controller
8	Fan units
9	Fan controllers
10	Power inlet box

Callout	Component
11	Air bleeder valve
12	Breaker panel
13	Operator display
14	Management module
15	AC transfer switch
16	Heat exchanger unit

The following spare parts are not shown:

- Automatic door release
- Main hose kit
- Electrical kit

Required tools

The following tools are required for each removal and replacement procedure:

- **AC transfer switch**
 - T-25 Torx driver
- **Air bleeder valve**
 - Adjustable wrench or Pliers
- **Condensation pump**
 - T-25 Torx driver
- **Fan controller**
 - T-25 Torx driver
- **Fan unit**

No tools are required for this procedure.
- **Flow meter sensor**
 - T-25 Torx driver
 - Flathead screwdriver
- **Front automatic door release**
 - Allen wrench (included in the replacement kit)
- **Management module**

No tools are required for this procedure.
- **Operator display**
 - 7-mm socket or wrench
 - Wire cutters
- **Rear automatic door release**
 - T-25 Torx driver
 - Allen wrench (included in the replacement kit)

- **Water controller**
No tools are required for this procedure.
- **Water level sensors**
 - T-25 Torx driver
- **Water valve**
 - T-25 Torx driver
 - Razor blade
 - Pliers (included in the replacement kit)
 - 8-mm socket or wrench

Safety considerations

Before performing service procedures, review the following safety information.

Rack warnings and cautions

Before installing a spare kit, be sure that you understand the following warnings and cautions.



WARNING: You must follow the removal and replacement instructions listed in the site preparation guide, the user guide, and the maintenance and service guide. Failure to follow the instructions listed in these guides can void your warranty and service contract.



WARNING: To reduce the risk of electric shock or damage to the equipment, use extreme caution when removing and replacing components that involve water around the electrical wires and unsecured power inlet box. There is great risk of electrical shock when water is used near electricity.



IMPORTANT: To reduce the risk of the servers overheating, open all of the rack doors of each rack attached to the MCS G2 unit while completing the following procedures in order to increase air flow within the rack.



IMPORTANT: While the most important cautions and warnings have been included in this document, consult the site preparation guide and the user guide provided with the original unit for a complete list of cautions and warnings.

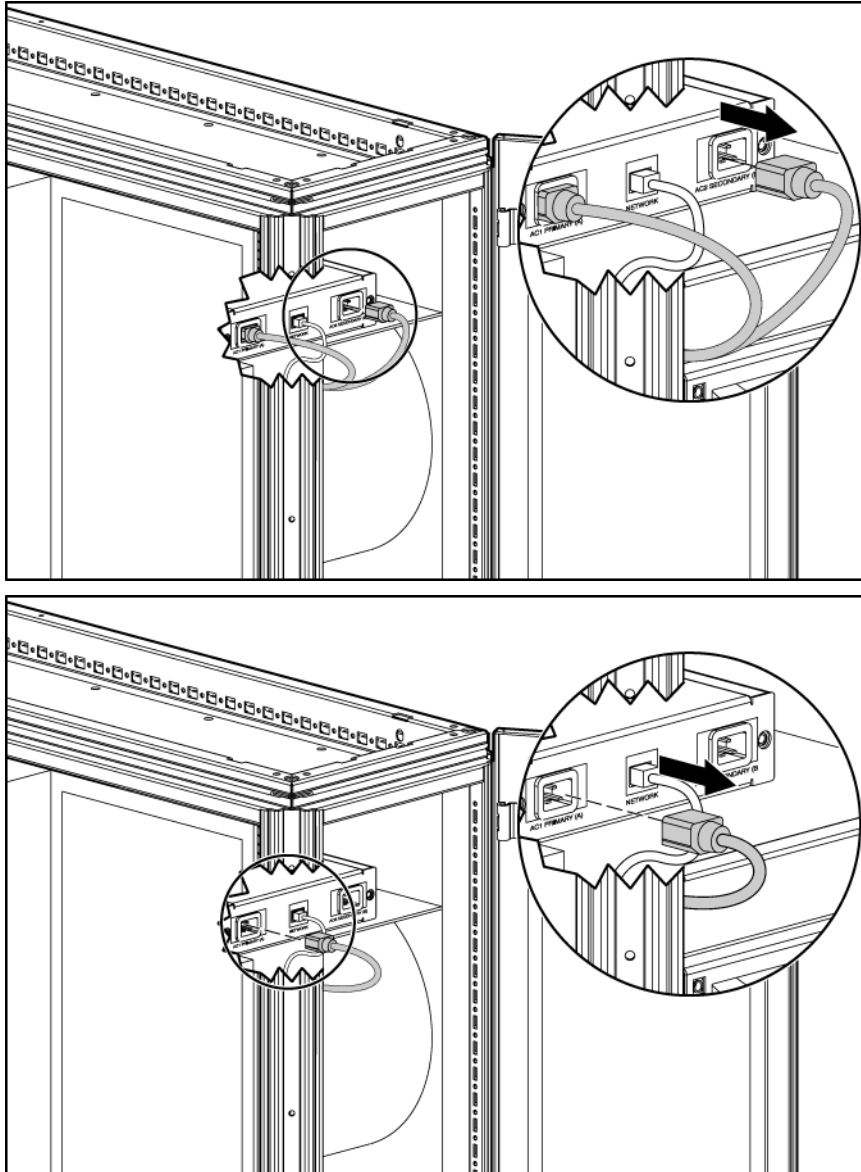
Preparation procedures

Before you perform certain service procedures, perform one or more of the following procedures.

Disconnecting the power

1. Open the rear MCS G2 unit door.

2. Disconnect the two AC power cables from the power connectors, labeled Primary and Secondary, on the power inlet box.



Turning off the water

1. Turn off the water flowing into the MCS G2 unit, by closing the inlet (supply) and outlet (return) main water valves.
2. Confirm that no water is flowing into the MCS G2 unit.
 - a. Open the valve in manual mode.
 - b. Check the flow rate on the operator display or the web interface.

Draining water from the MCS G2 unit

1. Decide if you should drain one or both sides of the unit.
2. Disconnect either one or both main hoses from the facility water line connection.

3. Drain the water from the hoses into a bucket.

AC transfer switch

The AC transfer switch is located on the front panel of the MCS G2 unit.

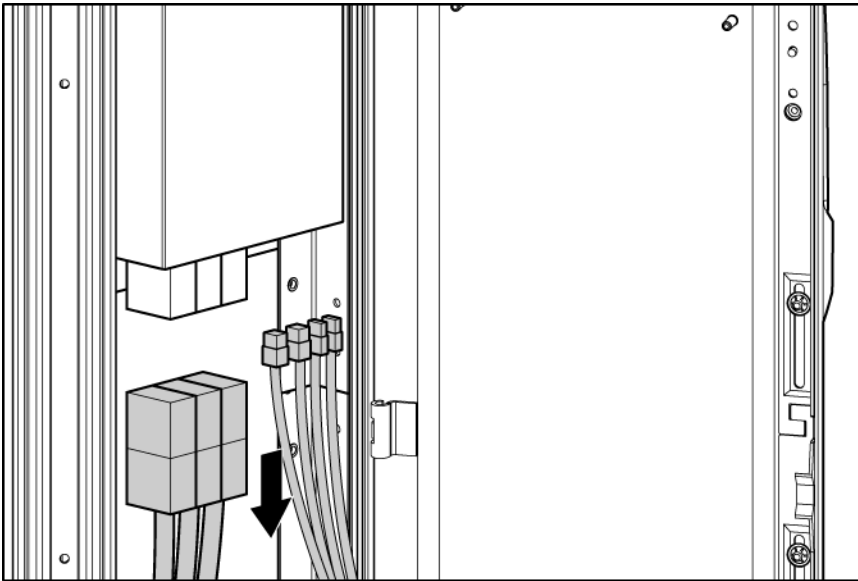


The following tools are required for installation:

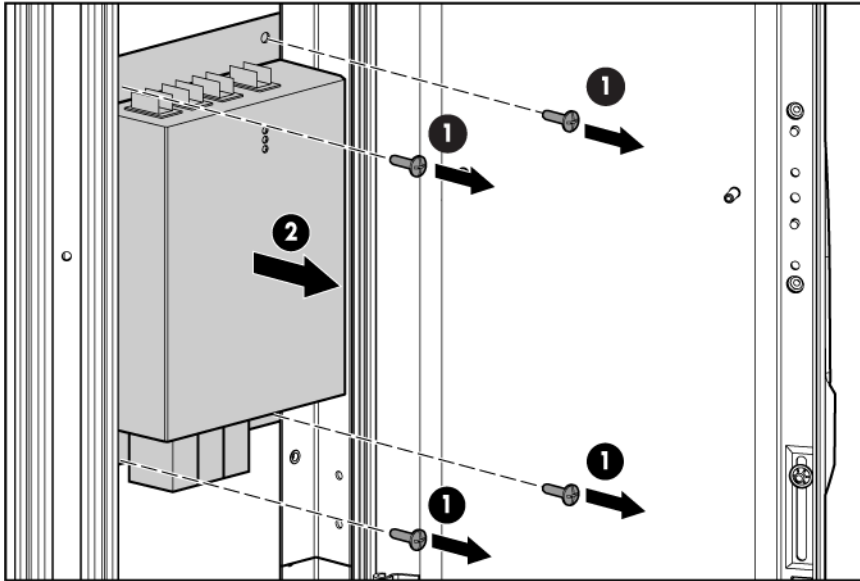
- T-25 Torx driver

Removing the AC transfer switch

1. Disconnect the power ("[Disconnecting the power](#)" on page 23).
2. Disconnect all cables from the AC transfer switch.

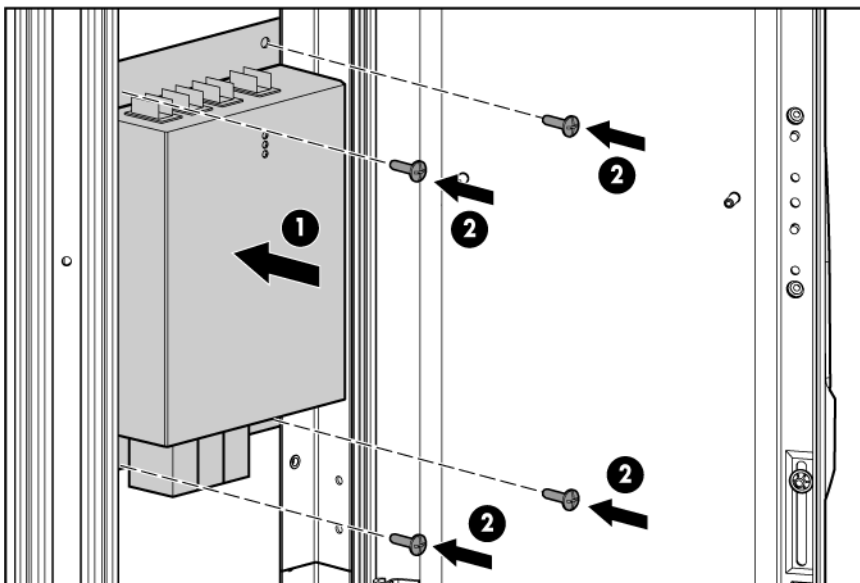


3. Using a T-25 Torx driver, remove the four sheet metal screws that secure the AC transfer switch to the MCS G2 unit.

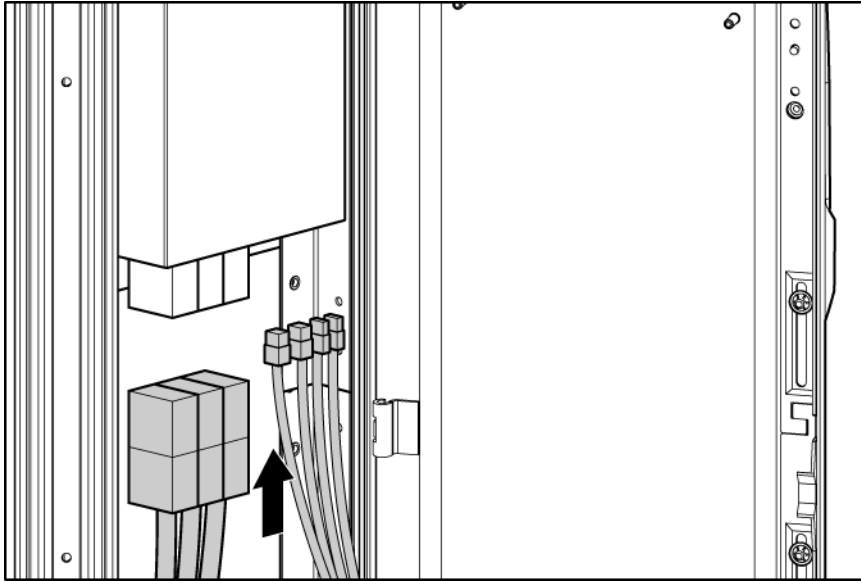


Replacing the AC transfer switch

1. Align the AC transfer switch to the front of the MCS G2 unit.
2. Using a T-25 Torx driver, insert four sheet metal screws to secure the AC transfer switch to the MCS G2 unit.



3. Connect the cables to appropriate connectors on the AC transfer switch, according to the label on each cable.



4. Reconnect the power cables ("[Reconnecting the power](#)" on page [73](#)).
5. Complete the operation checklist (on page [73](#)).

Air bleeder valve

The air bleeder valve is located on the top rear of the MCS G2 unit.



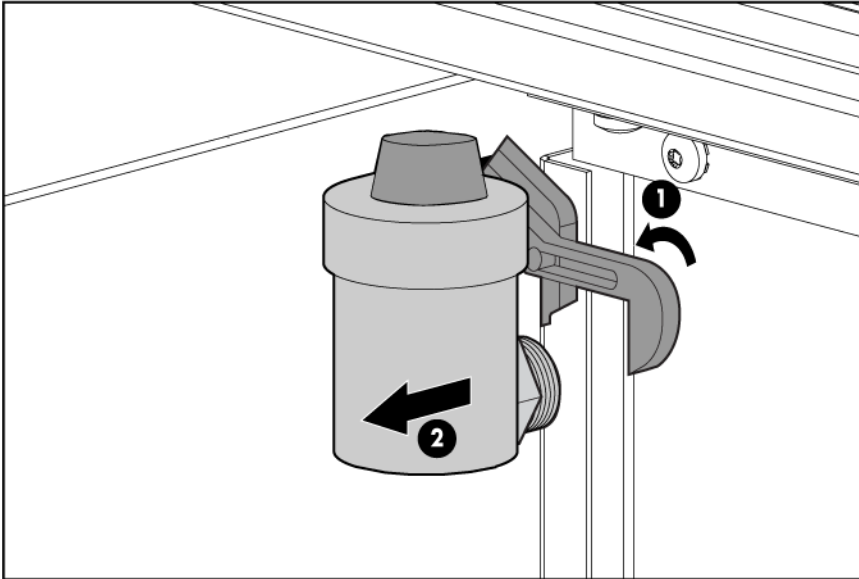
The following tools are required for installation:

- Adjustable wrench or Pliers

Removing the air bleeder valve

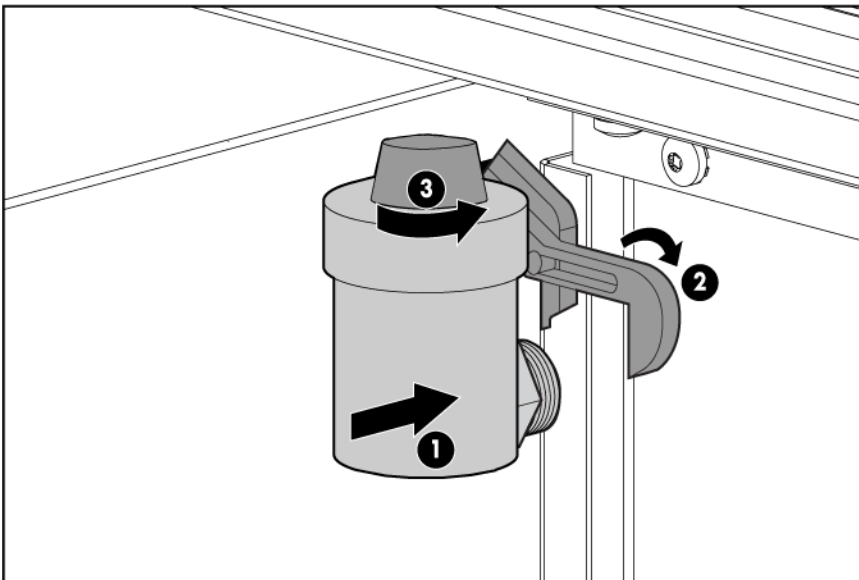
1. Remove the top fan unit ("[Removing the fan unit](#)" on page [36](#)).
2. Close the air bleeder shut-off valve adjacent to the air bleeder valve.
3. Using an adjustable wrench or pliers, unscrew the air bleeder valve from the shut-off valve (1).

4. Remove the air bleeder valve from the MCS G2 unit (2).



Replacing the air bleeder valve

1. Align the air bleeder valve to the shut-off valve (1).
2. Using an adjustable wrench or pliers, tighten the air bleeder valve to the shut-off valve (2).
3. Open the orange bleeder ball valve at the top of the air bleeder valve, counter-clockwise approximately 3/4 turn, to allow air to flow (3).



4. Replace the top fan unit ("[Replacing the fan unit](#)" on page [37](#)).
5. Complete the operation checklist (on page [73](#)).

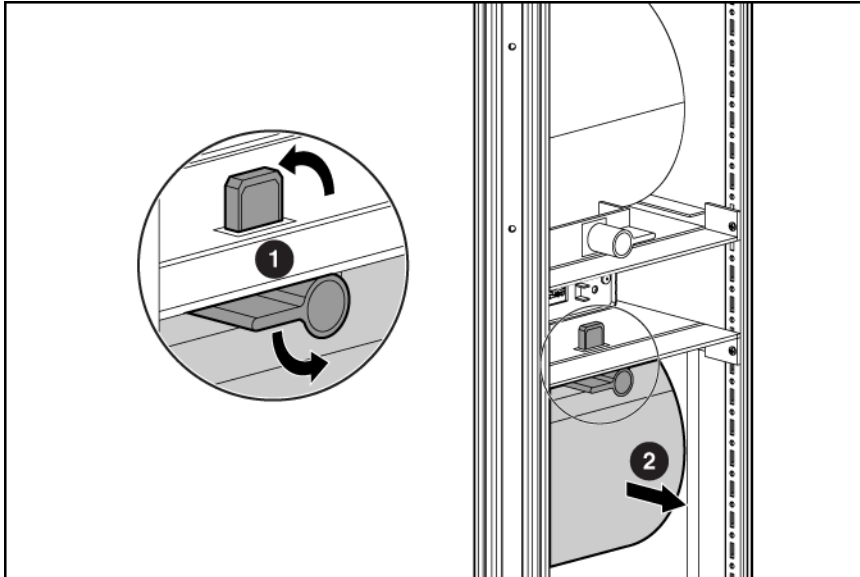
Bottom fan unit

The removal and replacement instructions for the bottom fan unit are provided so that you can access other components. If you are replacing the fan unit, see [Fan unit](#) (on page [36](#)).

No tools are required for this procedure.

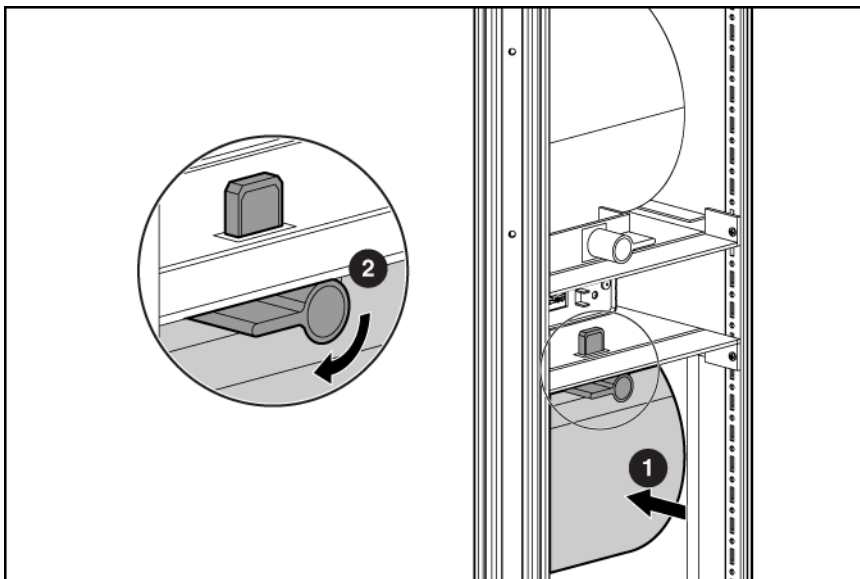
Removing the bottom fan unit

1. Remove the water controller ("Removing the water controller" on page 57).
2. Unlock the fan unit by rotating the handle on the unit counter-clockwise until the handle is vertical (1).
3. Pull the fan unit out of the MCS G2 unit (2).



Replacing the bottom fan unit

1. Align the fan unit with the fan bracket.
2. Slide the fan unit into the MCS G2 unit until the fan connector meets the fan controller connection (1).
3. Lock the fan in place by rotating the handle clockwise until the handle locks (2).



4. Replace the water controller ("[Replacing the water controller](#)" on page [59](#)).

Condensation pump

The condensation pump is a component of the water group located at the bottom of the MCS G2 unit.

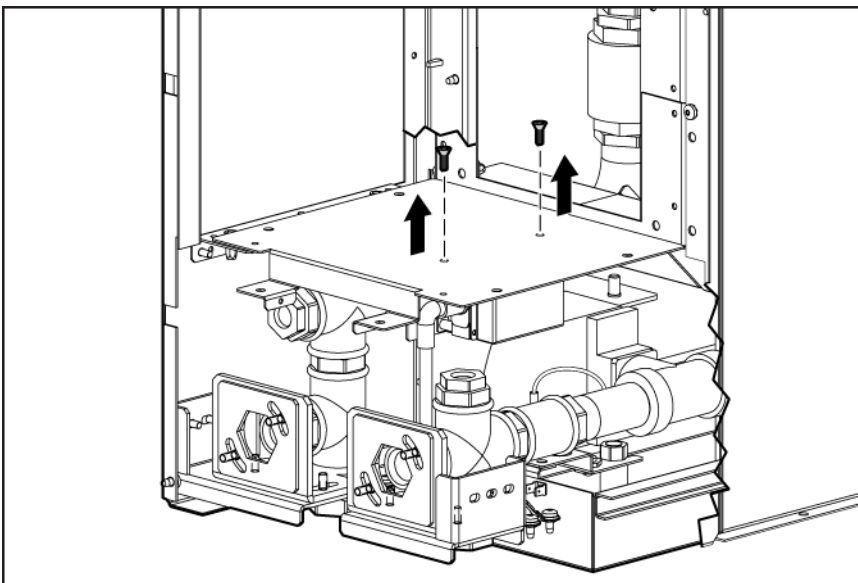


The following tools are required for installation:

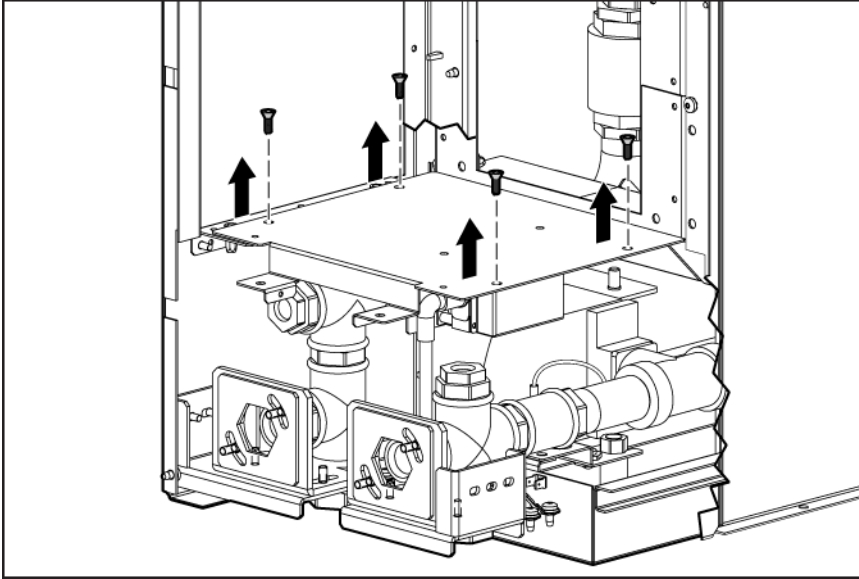
- T-25 Torx driver

Removing the condensation pump

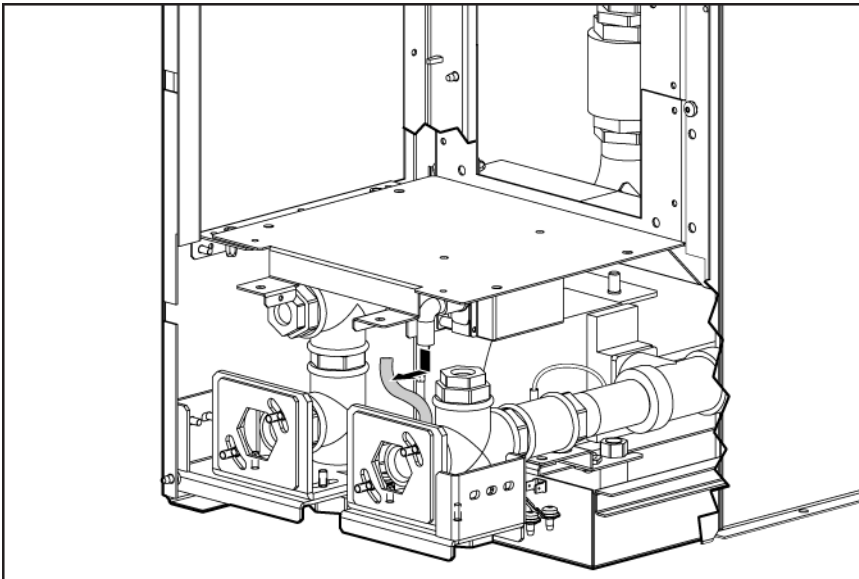
1. Disconnect the power ("[Disconnecting the power](#)" on page [23](#)).
2. Remove the water controller ("[Removing the water controller](#)" on page [57](#)).
3. Remove the bottom fan unit ("[Removing the bottom fan unit](#)" on page [29](#)).
4. Remove the water group cover.
 - a. Using a T-25 Torx driver, remove the two flathead T-25 Torx screws that secure the condensation pump.



- b. Using a T-25 Torx driver, remove the four T-25 Torx screws at each corner that secure the water group cover to the MCS G2 unit.



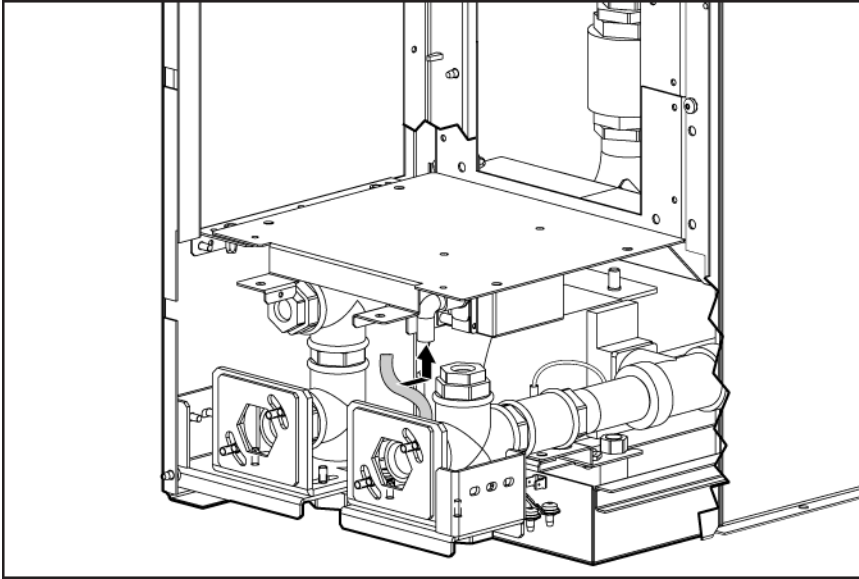
- 5. Disconnect the condensation pump cable from the water controller.
- 6. Disconnect the condensation outlet tube from the condensation pump.



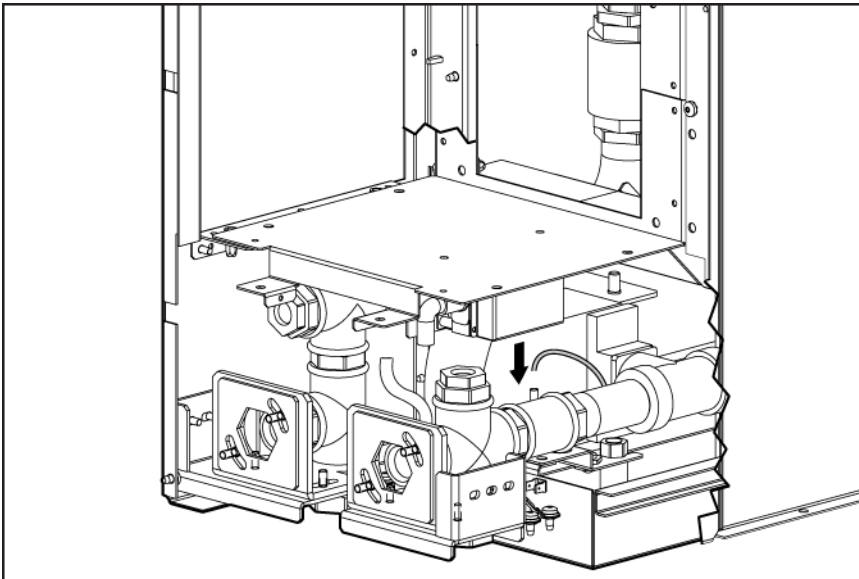
- 7. Remove the condensation pump and attached inlet tube from the MCS G2 unit.

Replacing the condensation pump

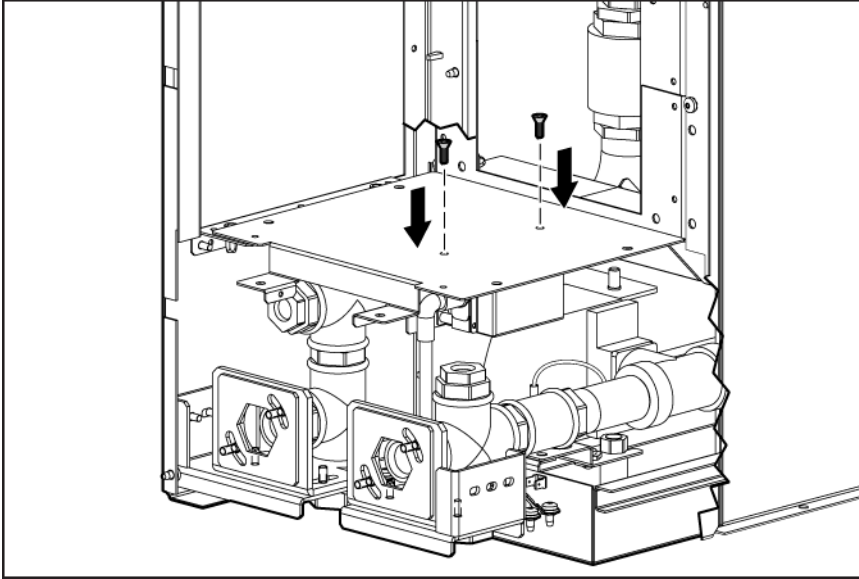
1. Insert the inlet tube into the brass tube at the bottom of the water group.



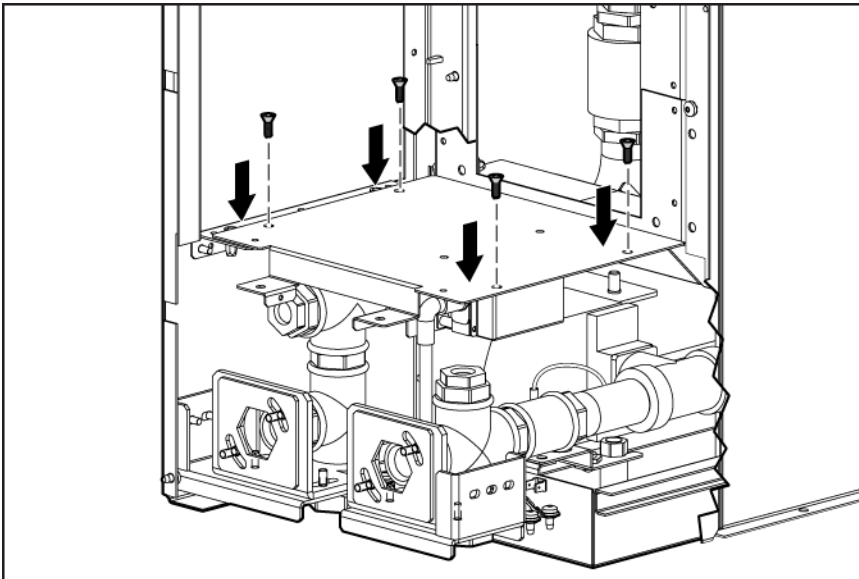
2. Connect the condensation outlet tube to the condensation pump.
3. Align the condensation pump to the water group cover.
4. Replace the water group cover.



- a. Using a T-25 Torx driver, insert and tighten the two flathead T-25 Torx screws into the condensation pump.



- b. Using a T-25 Torx driver, insert and tighten the four T-25 Torx screws into each corner of the water group cover.



5. Replace the bottom fan unit ("[Replacing the bottom fan unit](#)" on page 29).
6. Replace the water controller ("[Replacing the water controller](#)" on page 59).
7. Reconnect the power cables ("[Reconnecting the power](#)" on page 73).
8. Complete the operation checklist (on page 73).

Fan controller

The three fan controllers are located between the fan units at the center rear of the MCS G2 unit.

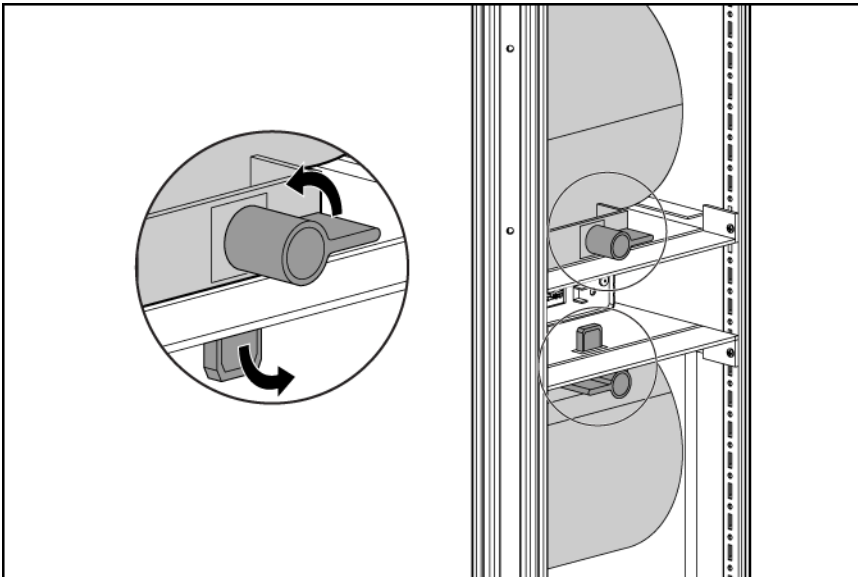


The following tools are required for installation:

- T-25 Torx driver

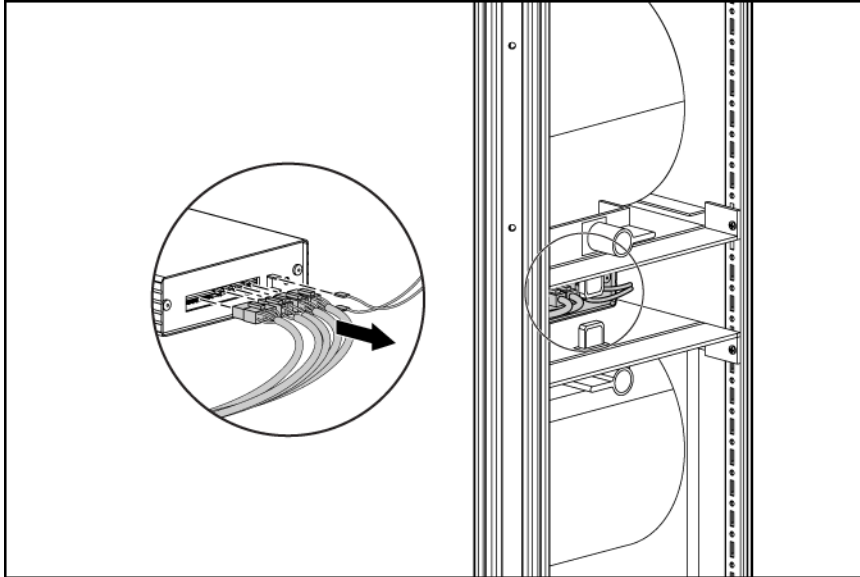
Removing the fan controller

1. Turn off the power ("[Disconnecting the power](#)" on page 23).
2. Unlock the two connecting fan units by rotating each handle on the unit counter-clockwise until the handle is vertical.



3. Remove the fan unit above the controller ("[Removing the fan unit](#)" on page 36).
4. Using a T-25 Torx driver, remove the four self-tapping screws that secure the fan plate above the fan controller to the MCS G2 unit.
5. Lift the fan plate to the side of the MCS G2 unit.

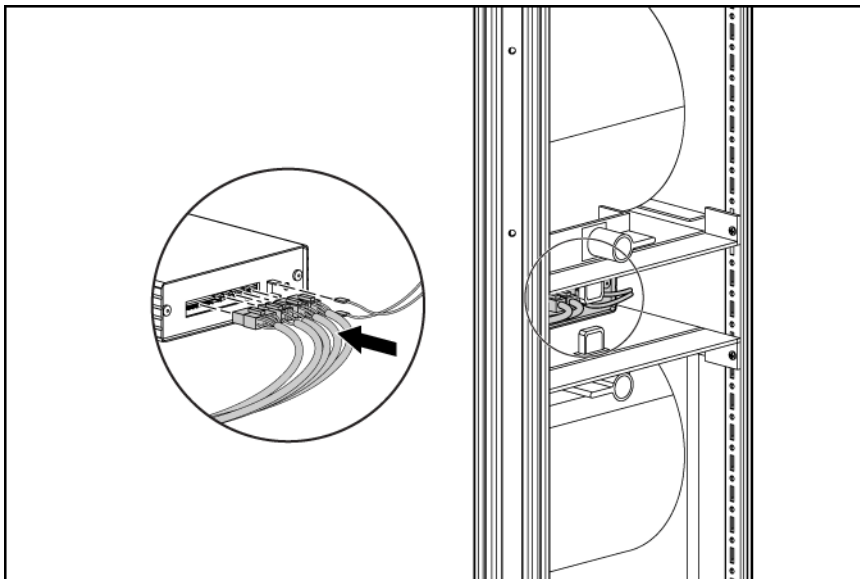
6. Disconnect the cables from the fan controller.



7. Slide the fan controller on its mounting bracket, and remove the fan controller from the MCS G2 unit.

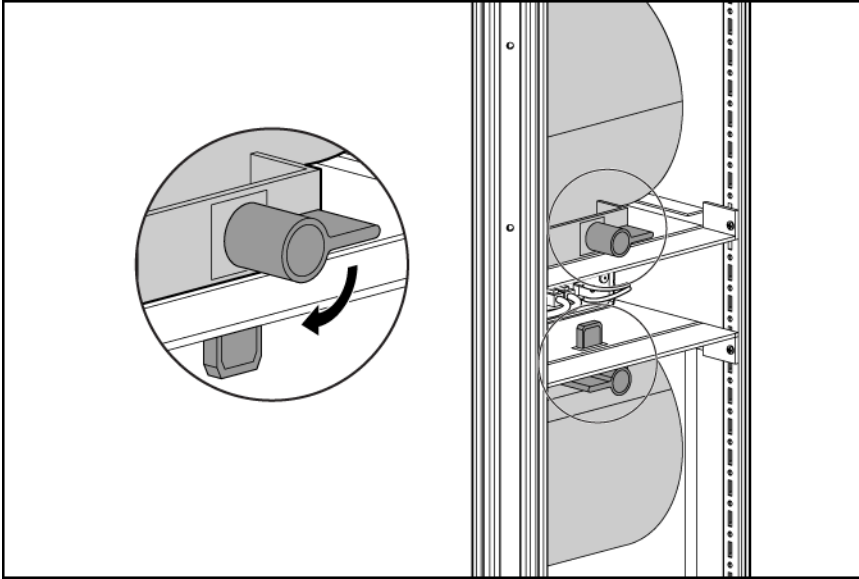
Replacing the fan controller

1. Align the fan controller with the mounting bracket.
2. Slide the fan controller into the MCS G2 unit.
3. Connect each cable to the appropriate location on the fan controller, according to the labels on the cables.



4. Lower the fan plate into position above the fan controller.
5. Using a T-25 Torx driver, insert four self-tapping screws to secure the fan plate to the MCS G2 unit.
6. Replace the fan unit above the fan controller ("[Replacing the fan unit](#)" on page [37](#)).

7. Lock the two connecting fans in place by rotating each handle clockwise until the handle locks.



8. Reconnect the power cables ("[Reconnecting the power](#)" on page [73](#)).
9. Complete the operation checklist (on page [73](#)).

Fan unit

The six fan units are located at the center rear of the MCS G2 unit.

The fan units are replaceable during real-time operation.

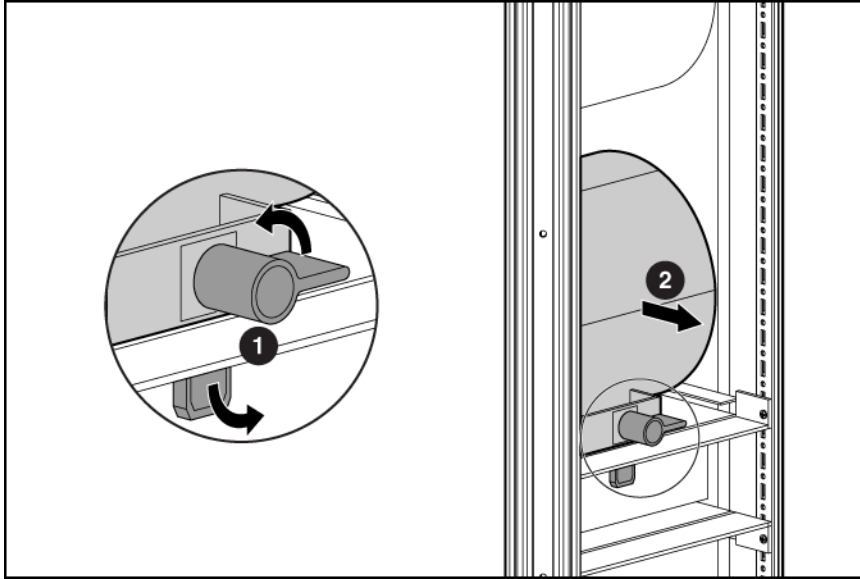


No tools are required for this procedure.

Removing the fan unit

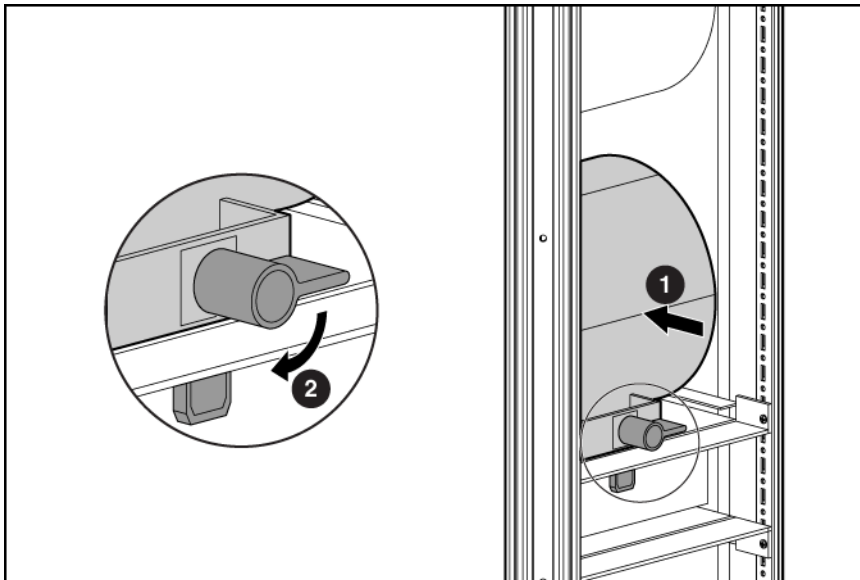
1. Unlock the fan unit by rotating the handle on the unit counter-clockwise until the handle is vertical (1).

2. Pull the fan unit out of the MCS G2 unit (2).



Replacing the fan unit

1. Align the fan unit with the fan bracket.
2. Slide the fan unit into the MCS G2 unit until the fan connector meets the fan controller connection (1).
3. Lock the fan in place by rotating the handle clockwise until the handle locks (2).



4. Complete the operation checklist (on page [73](#)).

Flow meter sensor

The flow meter sensor is a component of the water group located at the bottom of the MCS G2 unit.

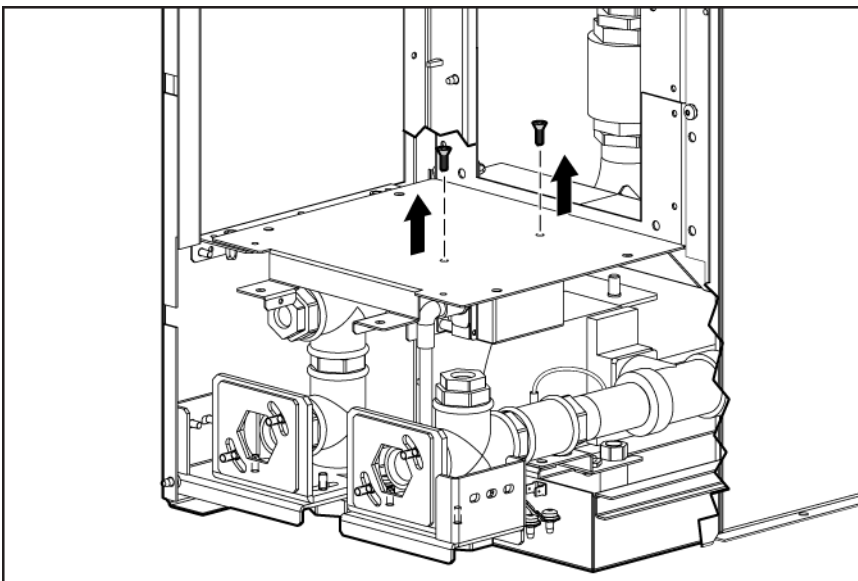


The following tools are required for installation:

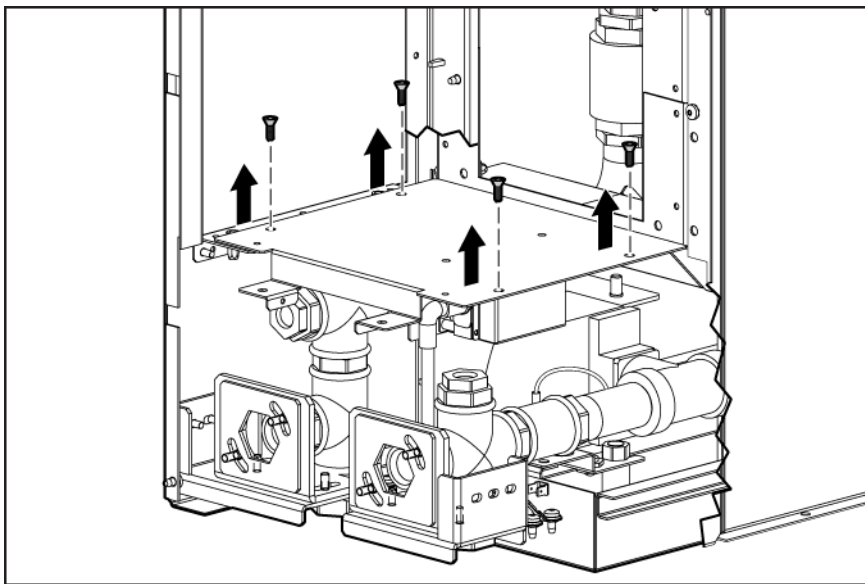
- T-25 Torx driver
- Flathead screwdriver

Removing the flow meter sensor

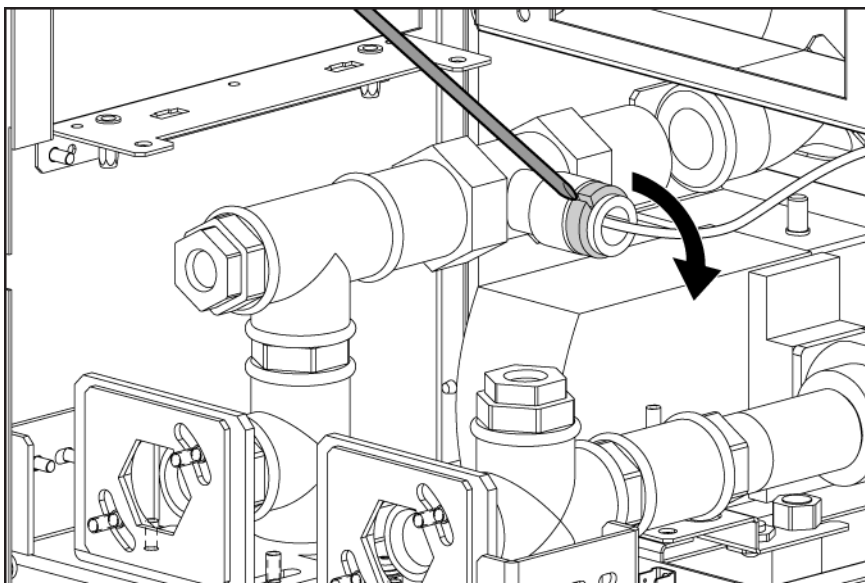
1. Disconnect the power ("[Disconnecting the power](#)" on page 23).
2. Turn off the water ("[Turning off the water](#)" on page 24).
3. Drain the main outlet water hose ("[Draining water from the MCS G2 unit](#)" on page 24).
4. Remove the water controller ("[Removing the water controller](#)" on page 57).
5. Remove the bottom fan unit ("[Removing the bottom fan unit](#)" on page 29).
6. Remove the water group cover.
 - a. Using a T-25 Torx driver, remove the two flathead T-25 Torx screws that secure the condensation pump.



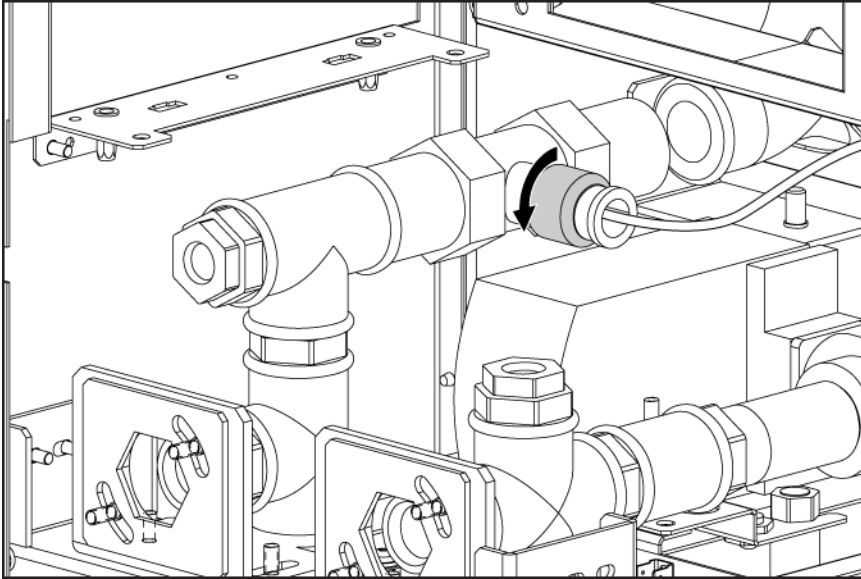
- b. Using a T-25 Torx driver, remove the four T-25 Torx screws at each corner that secure the water group cover to the MCS G2 unit.



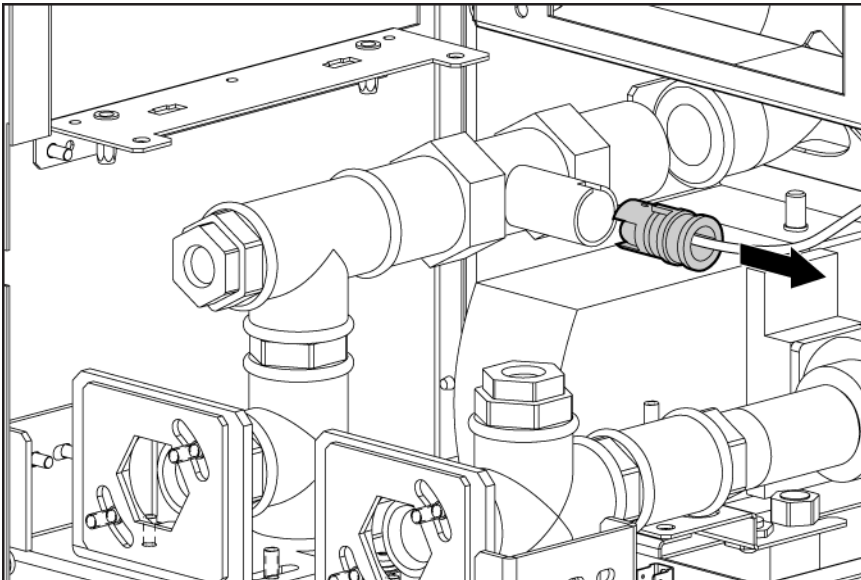
7. Remove the condensation pump ("[Removing the condensation pump](#)" on page 30).
8. Remove the plastic lock ring from the flow meter sensor.



9. Unscrew the plastic screw cap that secures the sensor to the flow meter.



10. Remove the sensor from the flow meter.

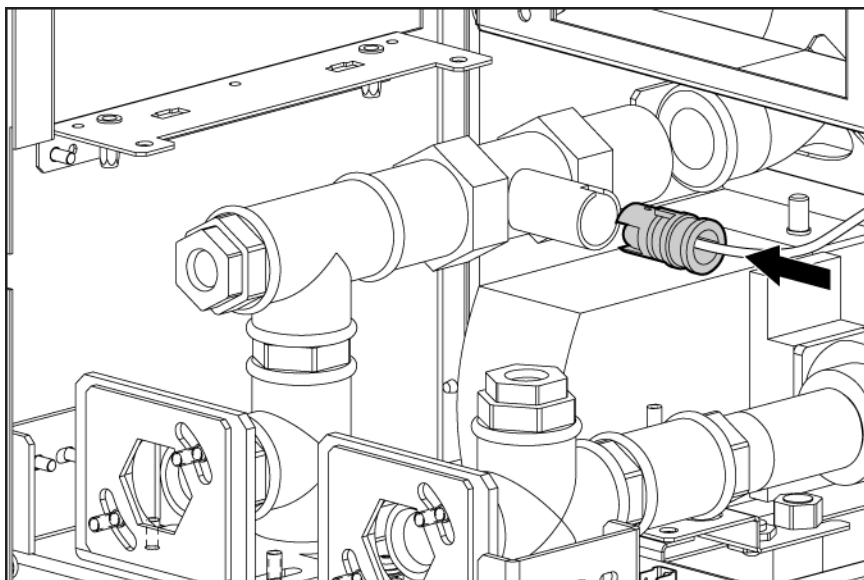


11. Disconnect the flow meter sensor cable from the water controller.
12. Remove the flow meter sensor cable from the cable wrap bundle, and remove the flow meter sensor and cable from the MCS G2 unit.

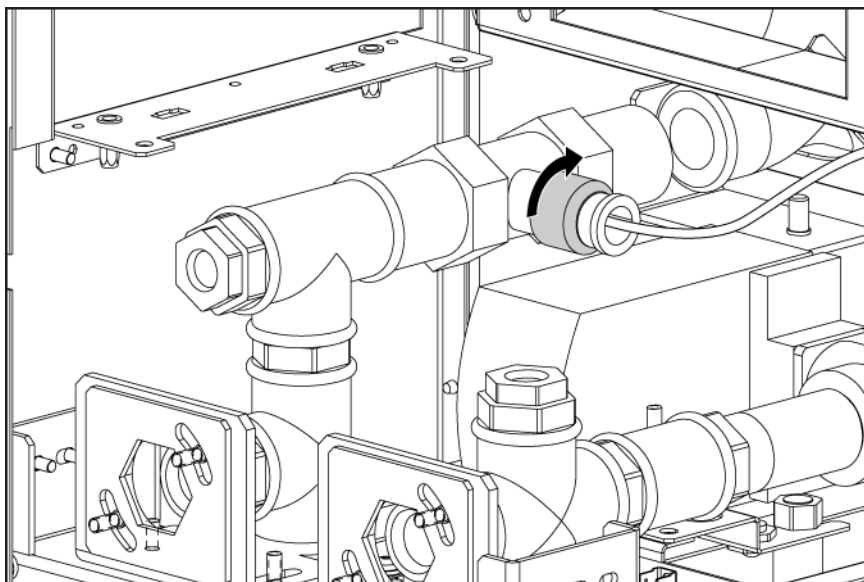
Replacing the flow meter sensor

1. Align the notch of the flow meter sensor to the keyed notch of the flow meter.

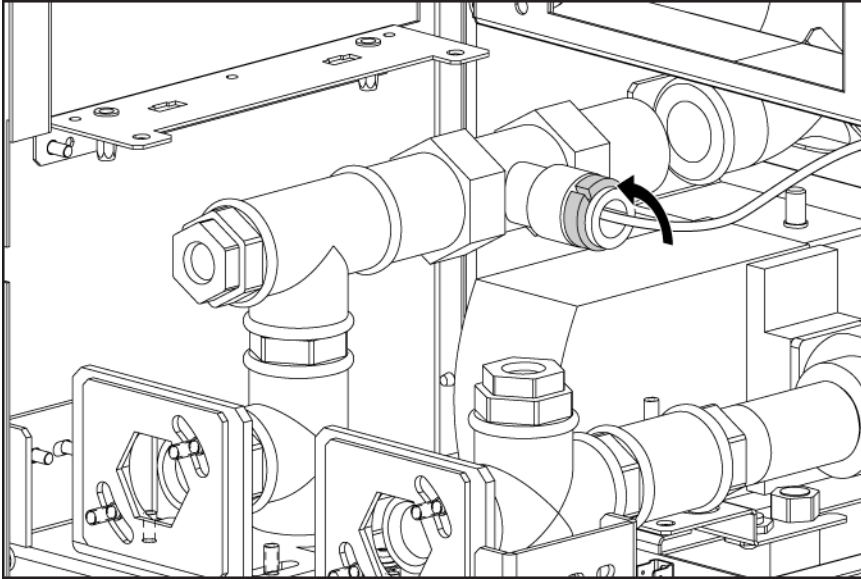
2. Insert the keyed sensor into the top of the flow meter.



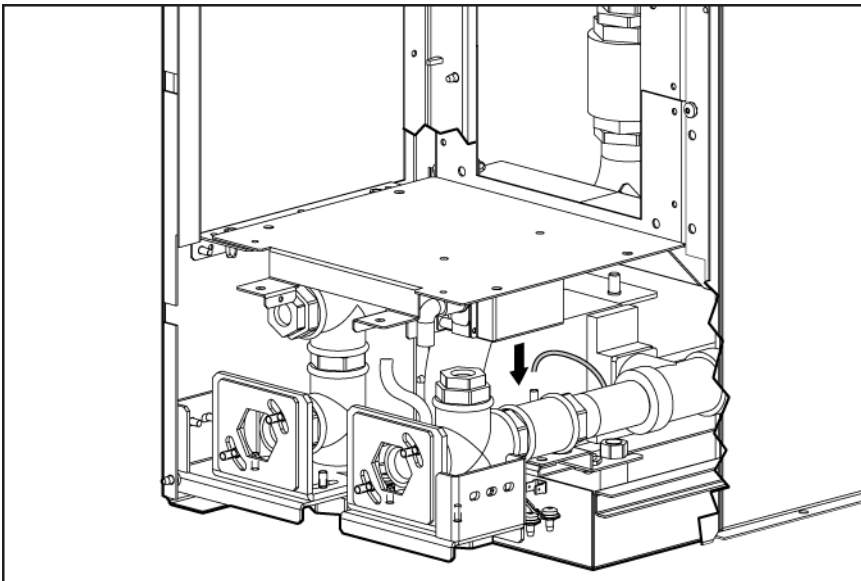
3. Tighten the plastic cap to secure the sensor to the flow meter.



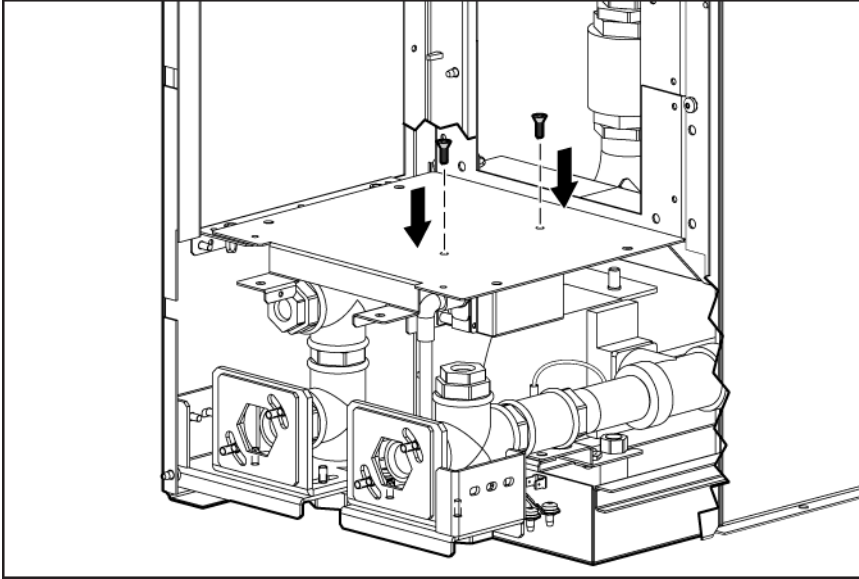
4. Replace the plastic lock ring above the flow meter sensor.



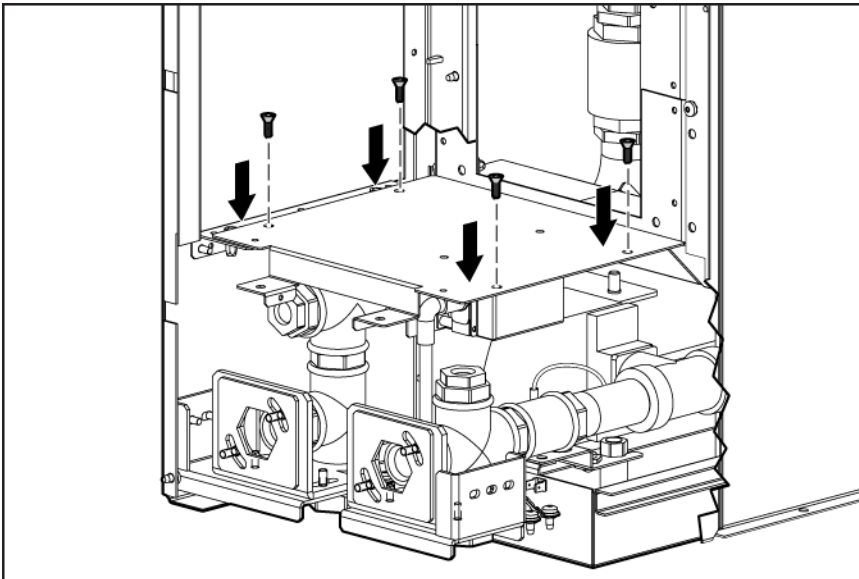
5. Route the flow meter sensor cable through the cable wrap toward the rear of the MCS G2 unit.
6. Connect the flow meter sensor cable to the appropriate connector on the water controller.
7. Replace the condensation pump ("[Replacing the condensation pump](#)" on page 32).
8. Replace the water group cover.



- a. Using a T-25 Torx driver, insert and tighten the two flathead T-25 Torx screws into the condensation pump.



- b. Using a T-25 Torx driver, insert and tighten the four T-25 Torx screws into each corner of the water group cover.



- 9. Replace the bottom fan unit ("[Replacing the bottom fan unit](#)" on page 29).
- 10. Replace the water controller ("[Replacing the water controller](#)" on page 59).
- 11. Reconnect the main outlet water hose ("[Reconnecting the main water hoses](#)" on page 73).
- 12. Reconnect the power cables ("[Reconnecting the power](#)" on page 73).
- 13. Restore the water flow to the MCS G2 unit ("[Restoring water flow](#)" on page 74).
- 14. Complete the operation checklist (on page 73).

Front automatic door release

The front automatic door release is located on the front door of the rack attached to the MCS G2 unit.

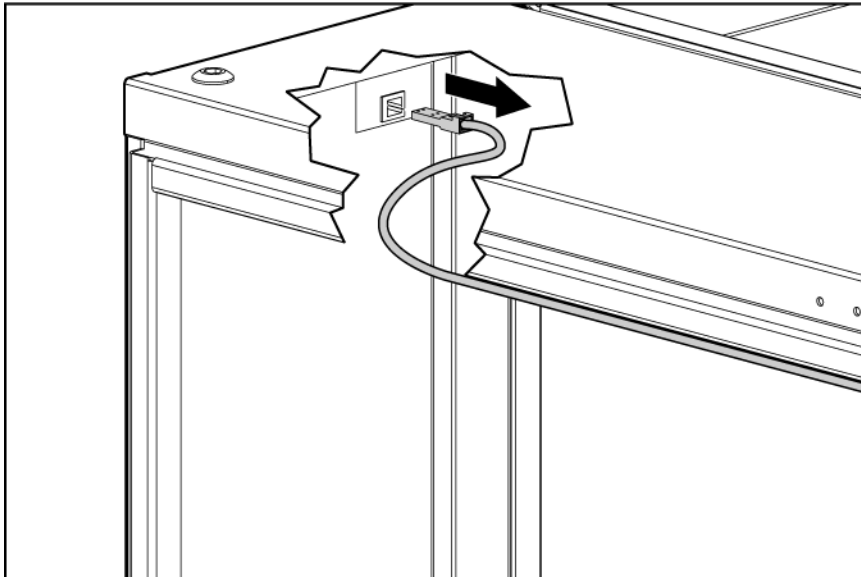


The following tools are required for installation:

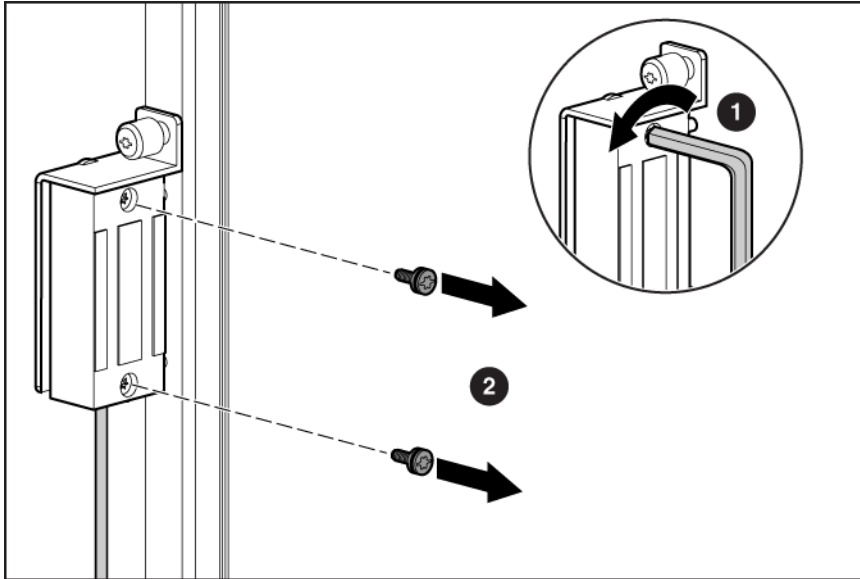
- Allen wrench (included in the replacement kit)

Removing the front automatic door release

1. Unplug the electromagnetic lock cable from the panel connector on the MCS G2 unit.



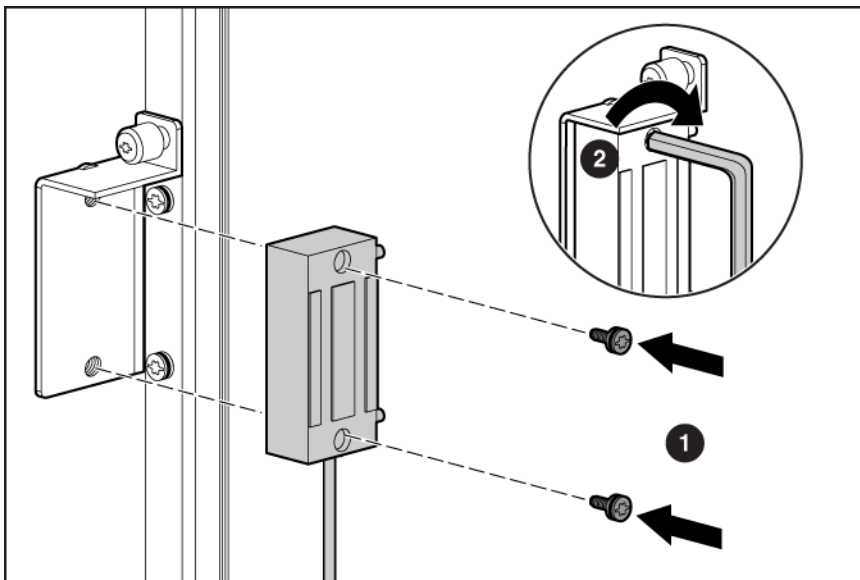
2. Using an Allen wrench, included in your replacement kit, remove the two black cap screws that secure the electromagnetic lock to the electromagnetic lock bracket.



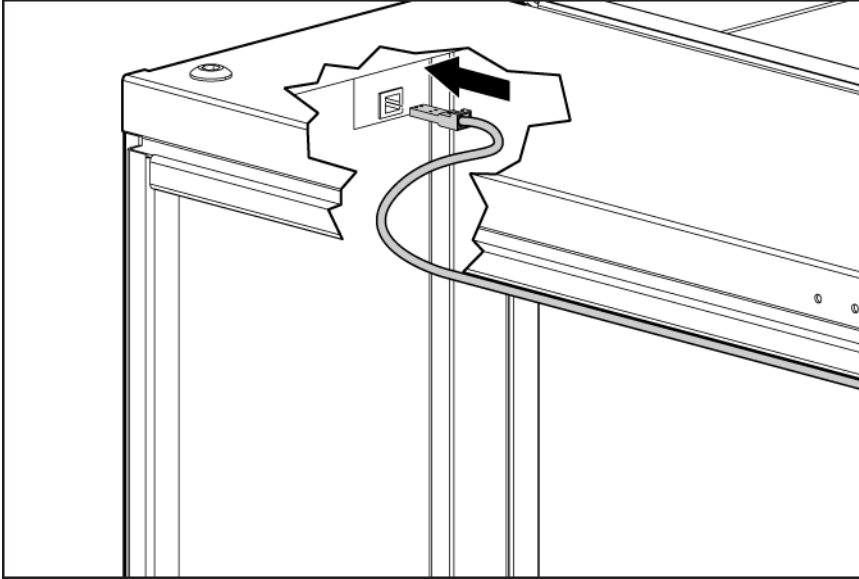
3. Remove the electromagnetic lock and cable from the rack.

Replacing the front automatic door release

1. Align the electromagnetic lock to the electromagnetic lock bracket.
2. Using an Allen wrench, included in your replacement kit, insert and tighten two black cap screws to secure the electromagnetic lock to the electromagnetic lock bracket.



3. Route the magnetic lock cable up the side of the rack, across the front of the rack, and plug the cable into the panel connector on the MCS G2 unit.



4. Complete the operation checklist (on page 73).

Management module

The management module is located on the front panel of the MCS G2 unit.

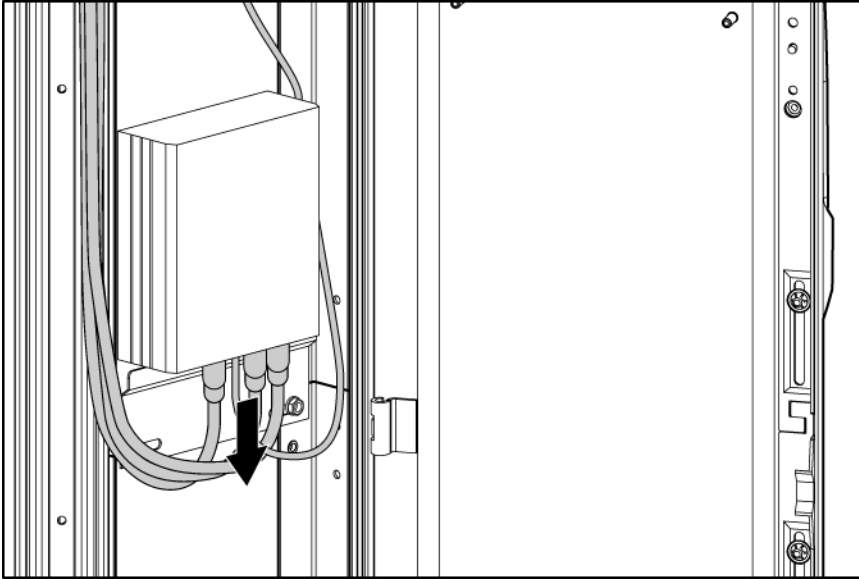


No tools are required for this procedure.

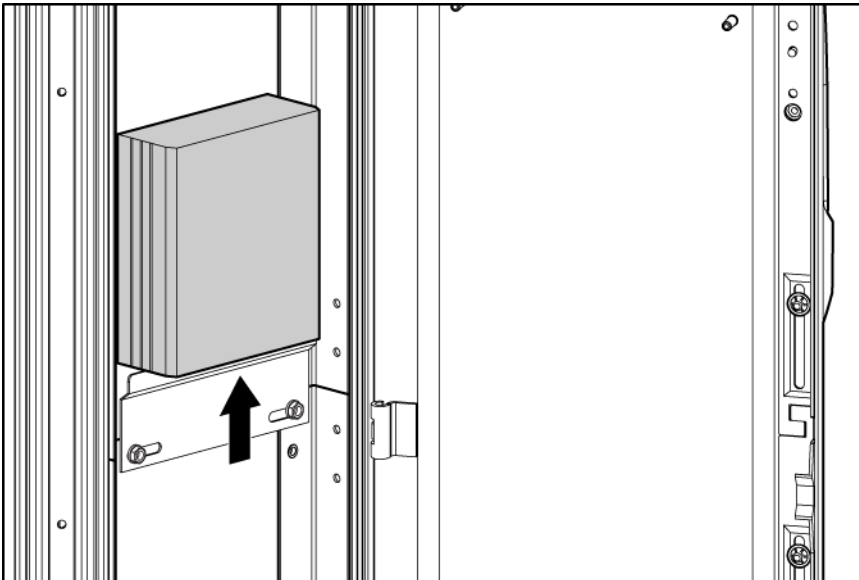
Removing the management module

1. Disconnect the power ("Disconnecting the power" on page 23).
2. Open the front door of the MCS G2 unit.

3. Disconnect the cables from the management module.

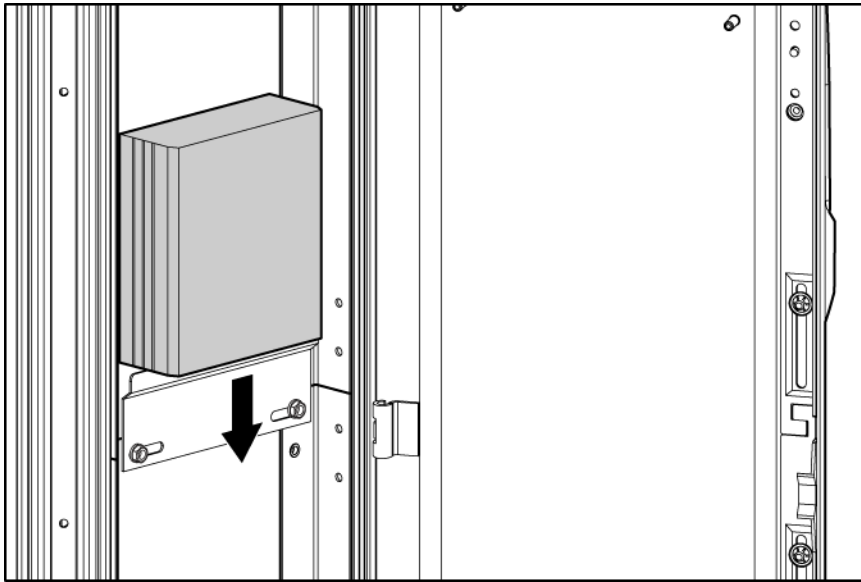


4. Slide the management module off the mounting bracket, and remove it from the MCS G2 unit.

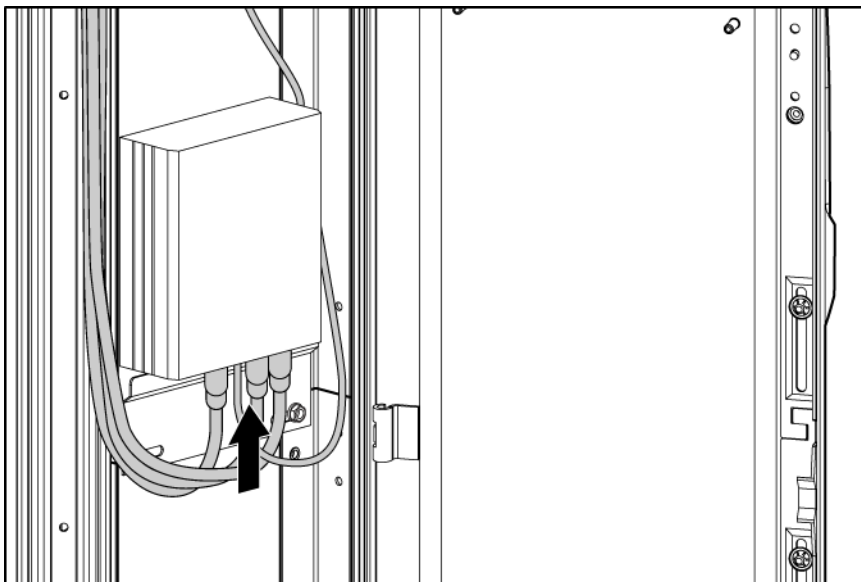


Replacing the management module

1. Slide the management module onto the mounting bracket on the front panel of the MCS G2 unit.

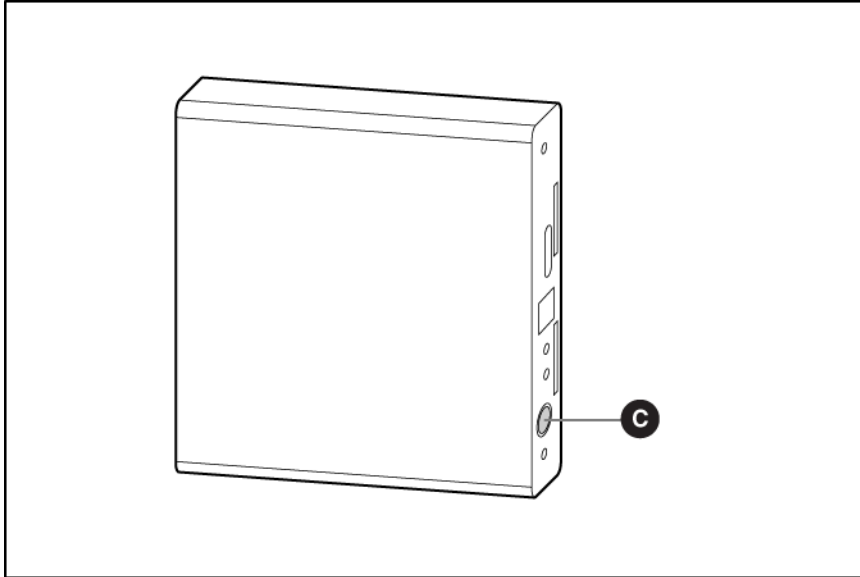


2. Connect the cables to the appropriate connectors on the management module, according to the label on each cable.



3. Power up the management module.

4. Press and hold the C key to reset the management module.



5. Reconnect the power cables ("[Reconnecting the power](#)" on page 73).
6. Verify the user-defined settings through the web interface.
7. Complete the operation checklist (on page 73).

Operator display

The operator display is located on the front door of the MCS G2 unit.



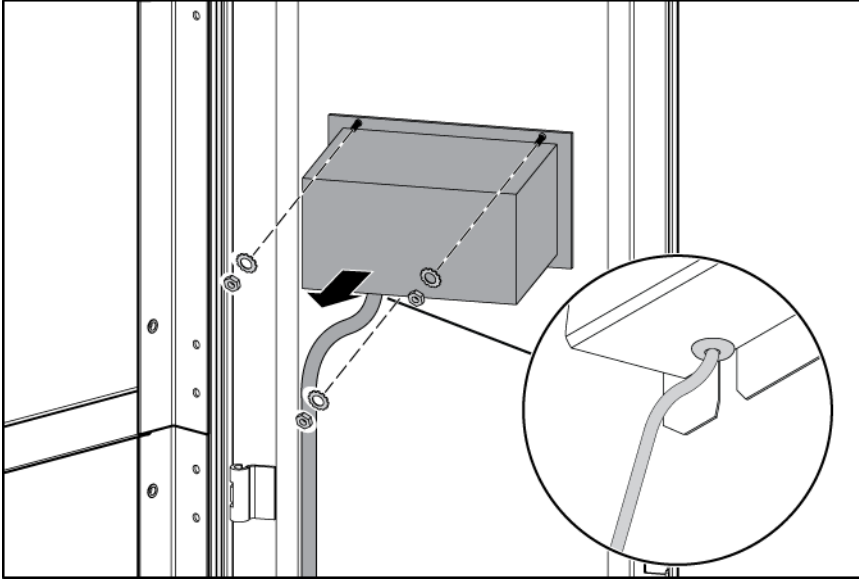
The following tools are required for installation:

- 7-mm socket or wrench
- Wire cutters

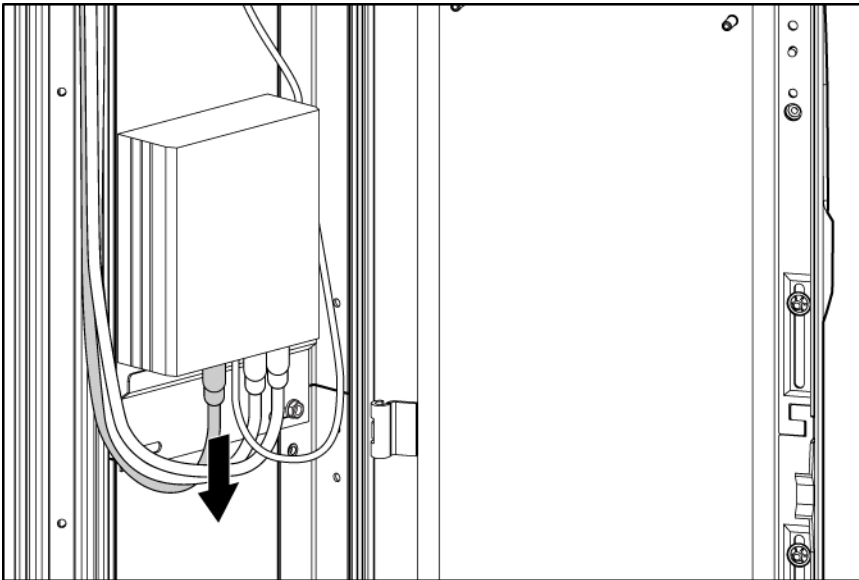
Removing the operator display

1. Disconnect the power ("[Disconnecting the power](#)" on page 23).
2. Open the front door of the MCS G2 unit.
3. Using wire cutters, clip the cable ties that bind all the cables on the front of the MCS G2 unit.

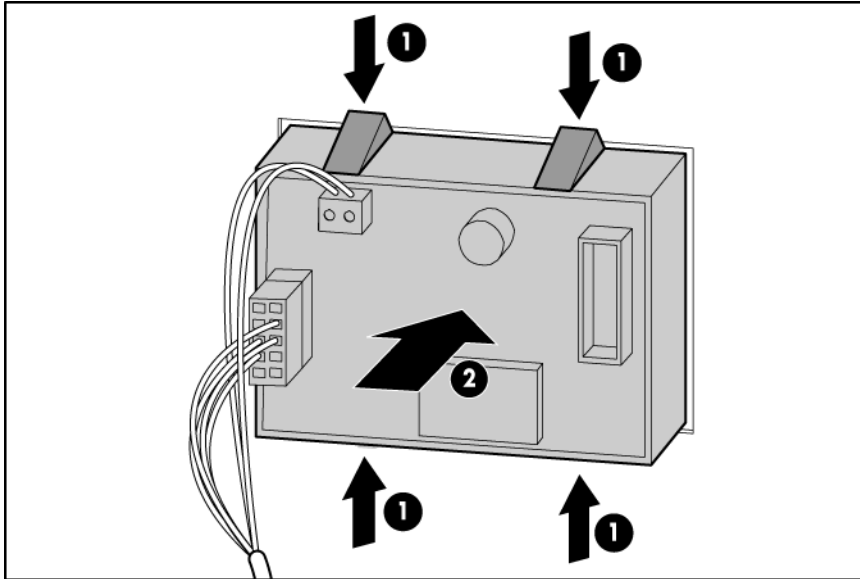
4. Using a 7-mm socket or wrench, remove the three locking nuts and external star washers that secure the rear cover to the inside of the front door of the MCS G2 unit.



5. Remove the rubber grommet securing the cables to the rear cover.
6. Remove the rear cover.
7. Disconnect the operator display cable from the management module.

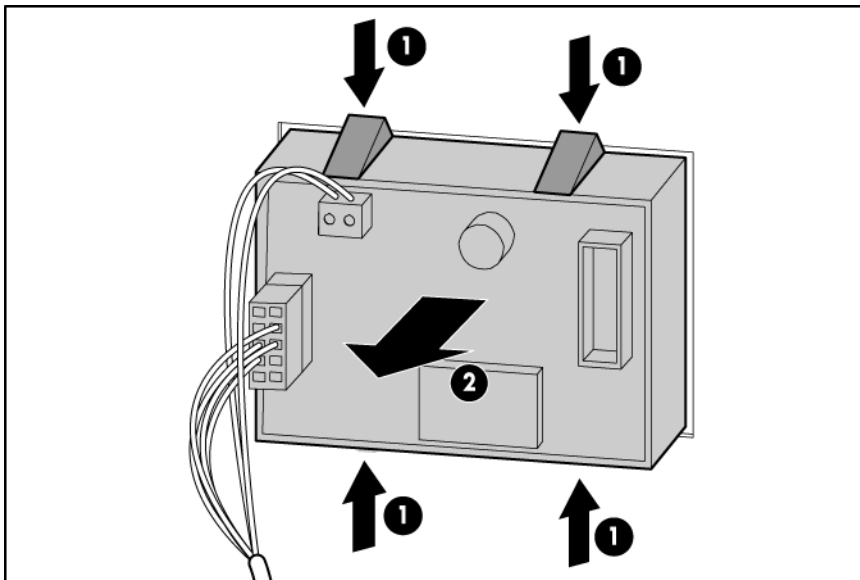


8. Squeeze the four release tabs on the top and bottom of the operator display (1), and push the operator display through the front door (2).

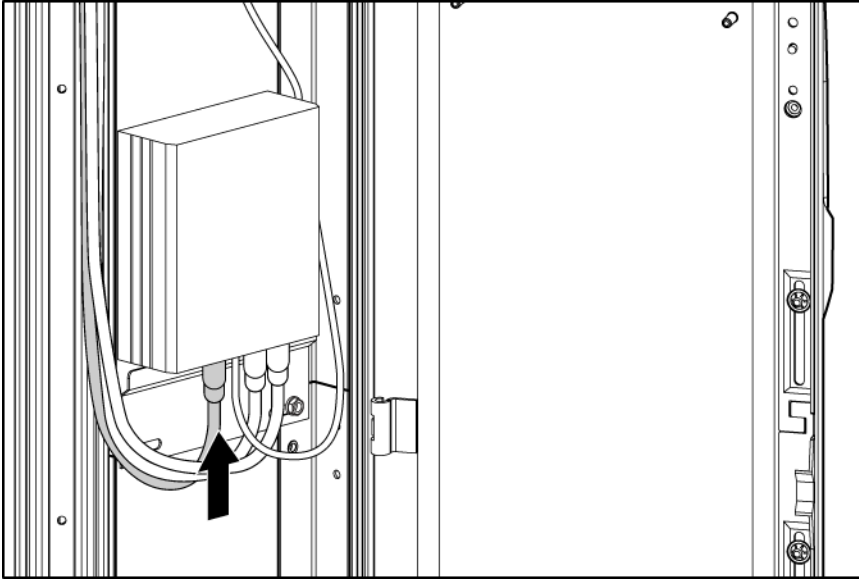


Replacing the operator display

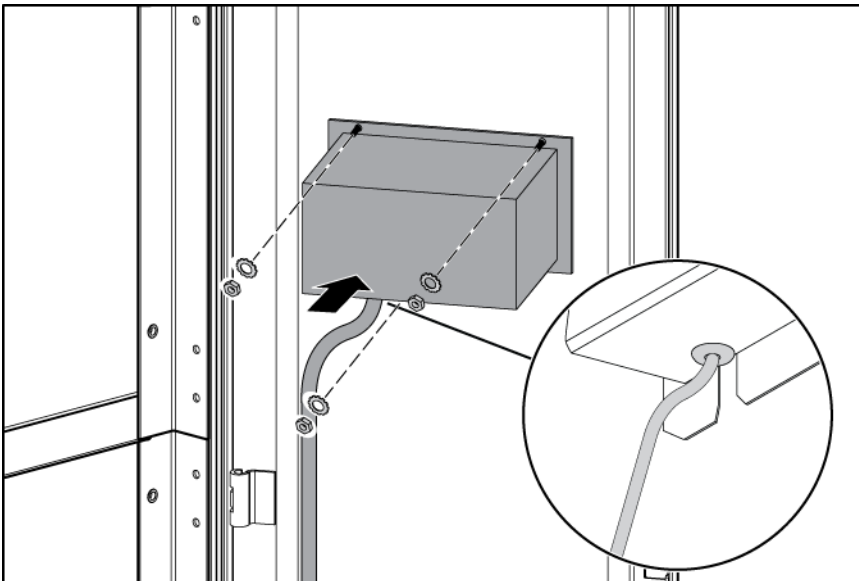
1. Hold the four release tabs down (1) while pushing the operator display through the front door of the MCS G2 unit (2). The blue connector must be at the top of the display.



2. Connect the operator display cable to the appropriate connector on the management module.



3. Slide any extra cable into the operator display rear cover, and secure by inserting the rubber grommet into the notch on the rear cover.
4. Using a 7-mm socket or wrench, secure the rear cover to the door by inserting three locking nuts and external star washers.



5. Use cable ties to wrap all of the cables together.
6. Reconnect the power cables ("[Reconnecting the power](#)" on page [73](#)).
7. Complete the operation checklist (on page [73](#)).

Rear automatic door release

The rear automatic door release is located on the rear door of the rack attached to the MCS G2 unit.

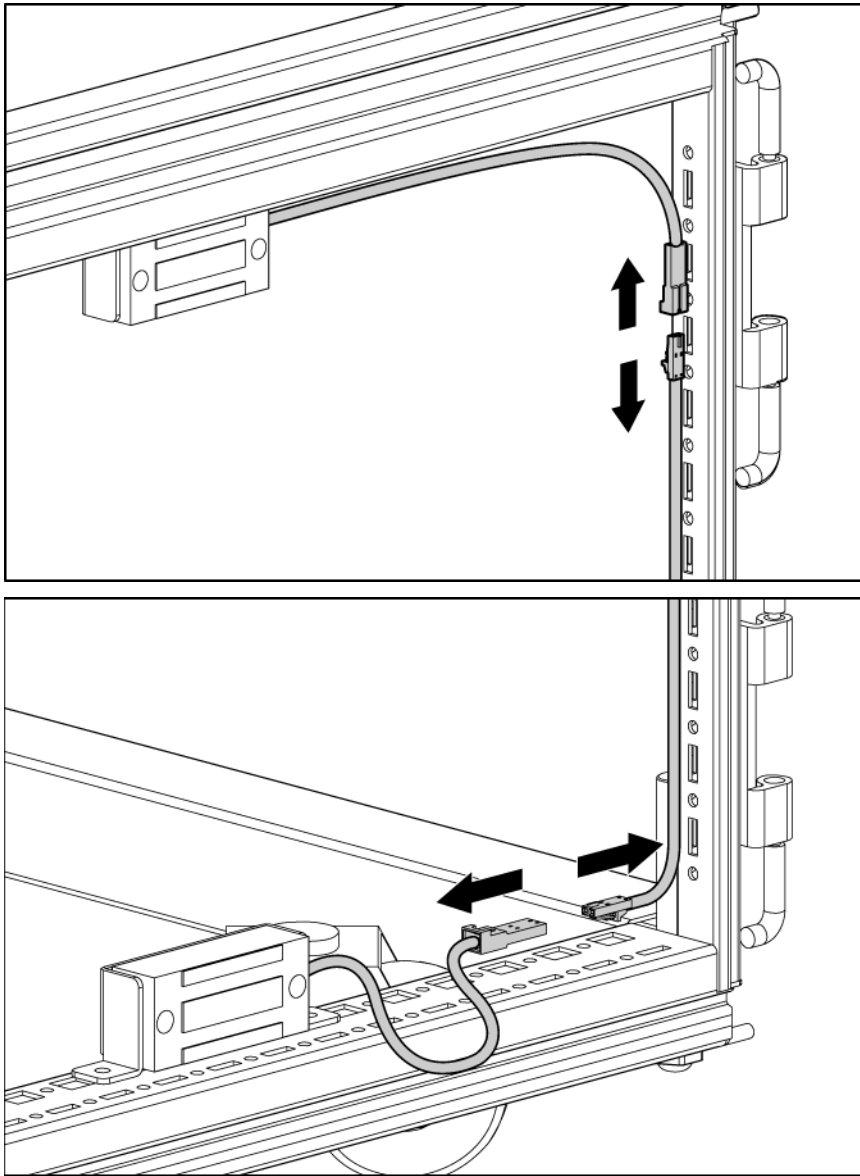


The following tools are required for installation:

- T-25 Torx driver
- Allen wrench (included in the replacement kit)

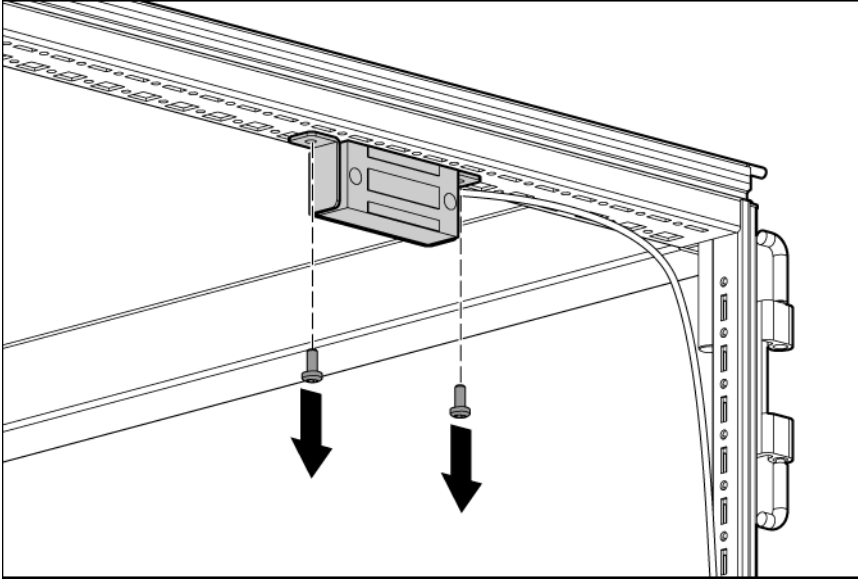
Removing the rear automatic door release

1. Unplug the top and bottom electromagnetic lock cables from the extension lock cable.

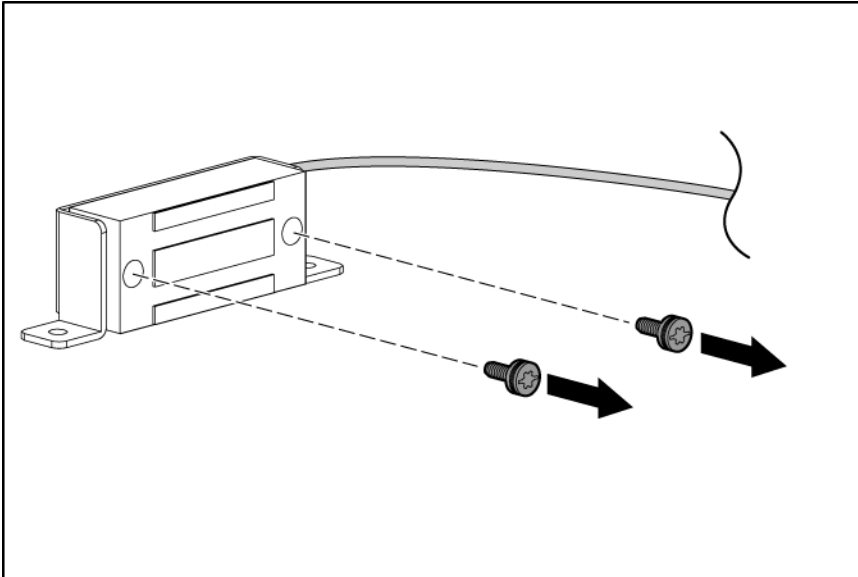


NOTE: Be sure to note the location of the electromagnetic brackets prior to removal.

2. Using a T-25 Torx driver, remove the four screws that secure the upper and lower electromagnetic lock brackets to the rack chassis.



3. Using an Allen wrench, included in the replacement kit, remove the two black cap screws that secure each electromagnetic lock to its electromagnetic lock bracket.

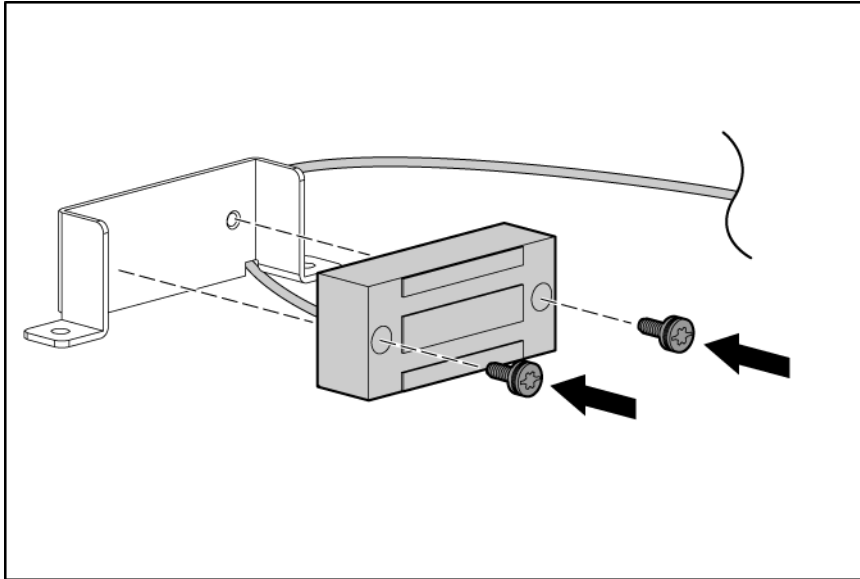


4. Remove the electromagnetic locks and cables from the rack.

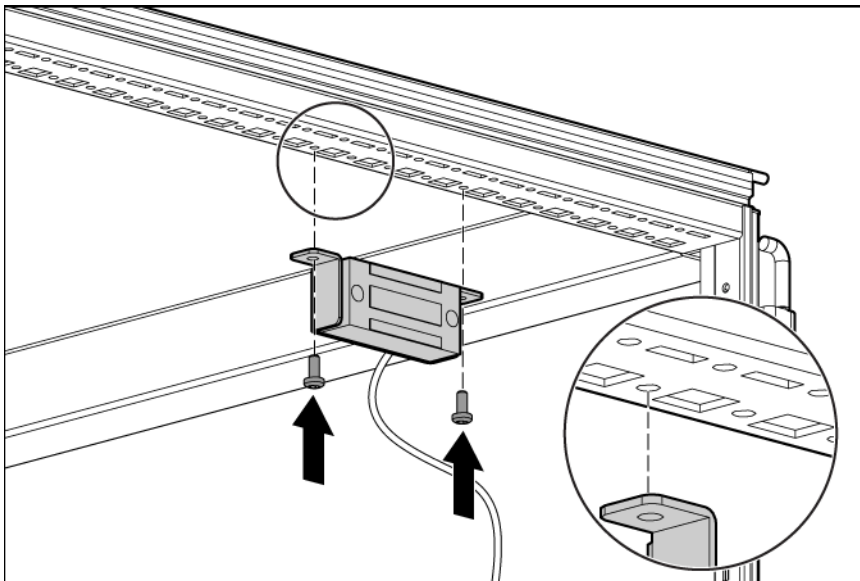
Replacing the rear automatic door release

1. Align the electromagnetic locks to the electromagnetic lock brackets.

2. Using an Allen wrench, included in the replacement kit, insert and tighten two black cap screws to secure each electromagnetic lock to its electromagnetic lock bracket.

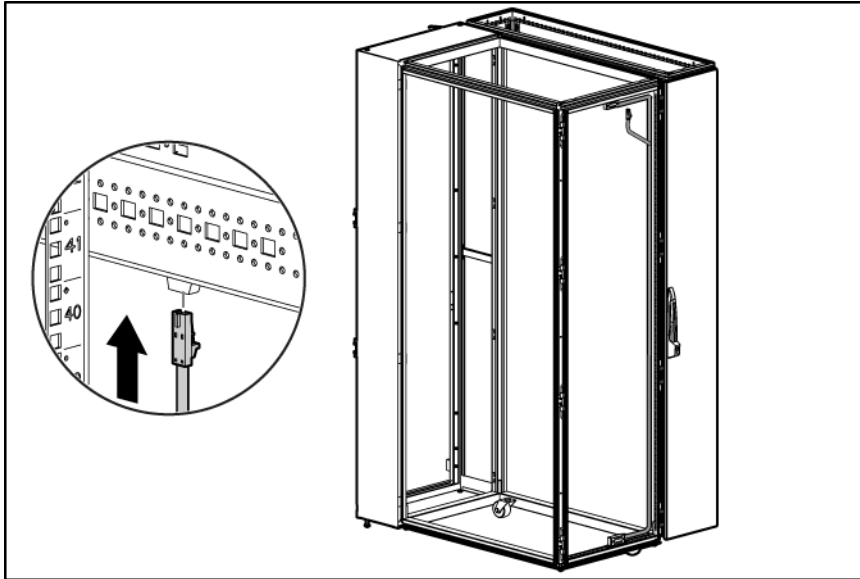


3. Install the top electromagnetic lock bracket to the rack chassis in the location you noted during removal.
 - a. Align the electromagnetic lock assembly to the rack chassis in the location you noted during removal.
 - b. Using a T-25 Torx driver, insert and tighten two M5.5 self-tapping screws into the inner row of rack holes to secure the electromagnetic lock assembly to the rack chassis.



4. Repeat step 3 for the bottom electromagnetic lock bracket.

5. Route the magnetic lock cable through the rear extension channel, across the rack, and plug it into the panel connector on the MCS G2 unit.



6. Complete the operation checklist (on page [73](#)).

Water controller

The water controller is located on the bottom rear of the MCS G2 unit.

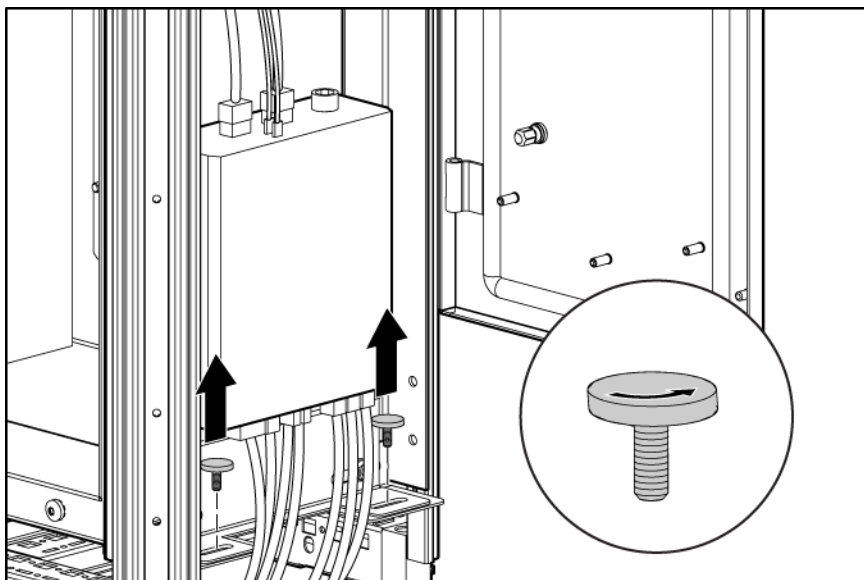


No tools are required for this procedure.

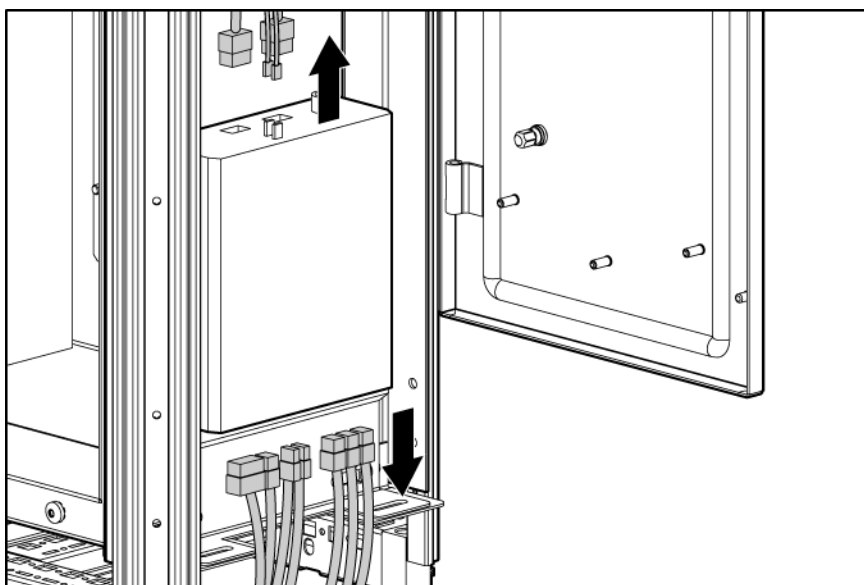
Removing the water controller

1. Disconnect the power ("[Disconnecting the power](#)" on page [23](#)).

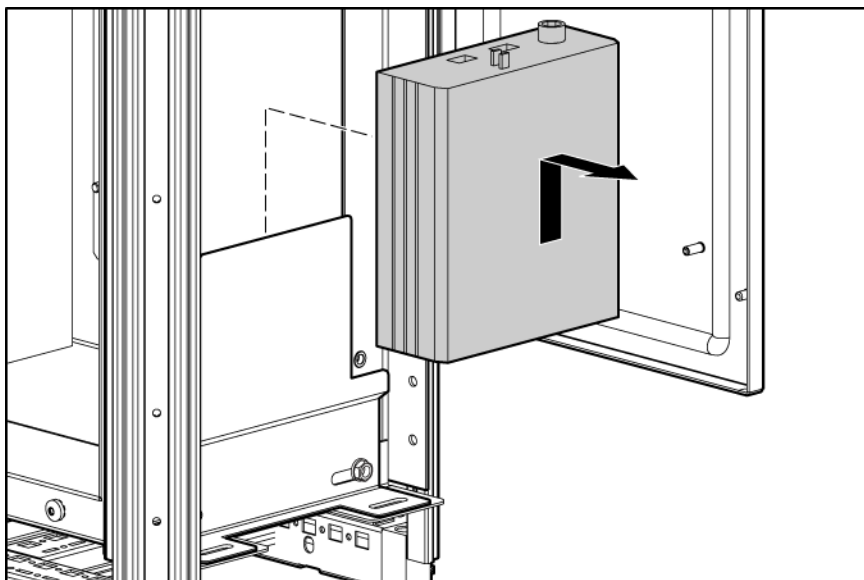
2. Remove the two thumbscrews that secure the water controller to the mounting bracket and base.



3. Remove the water deflecting plate.
4. Disconnect all cables from the water controller.



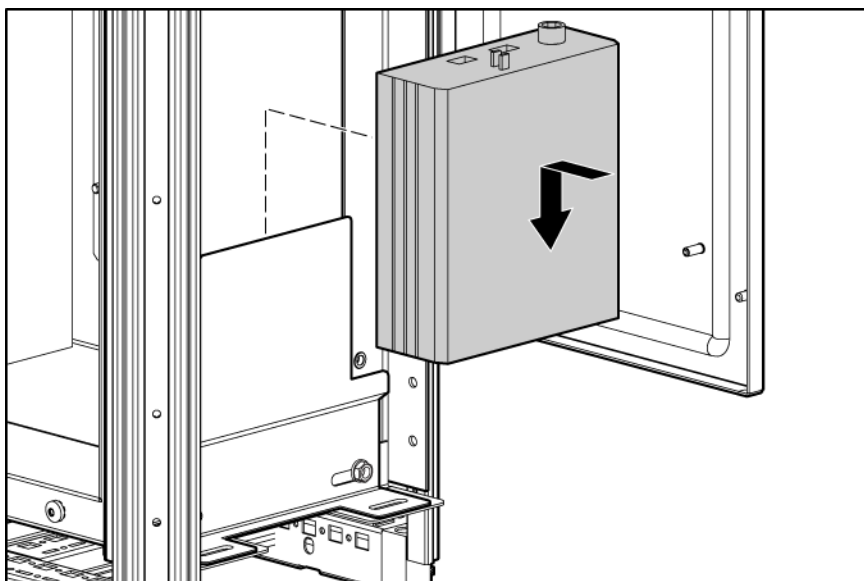
5. Slide the water controller off the mounting bracket.



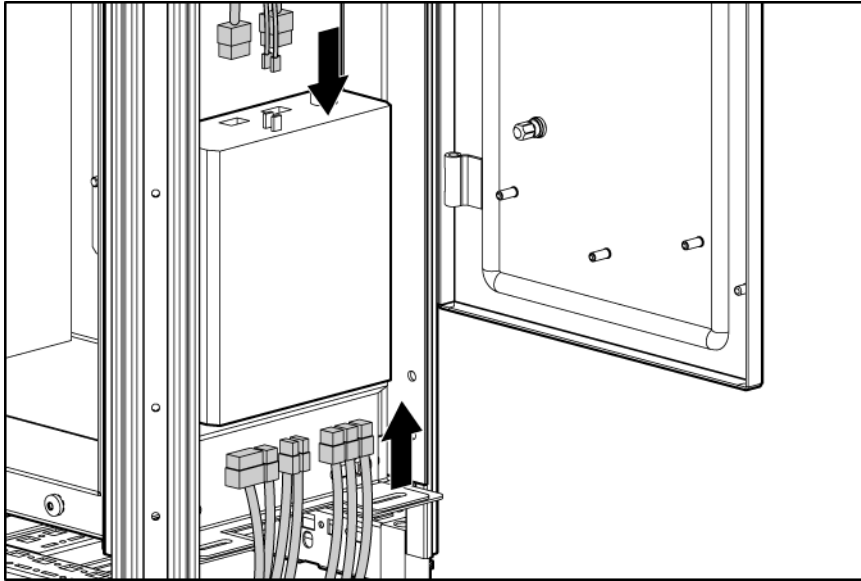
6. Remove the water controller base from the MCS G2 unit.

Replacing the water controller

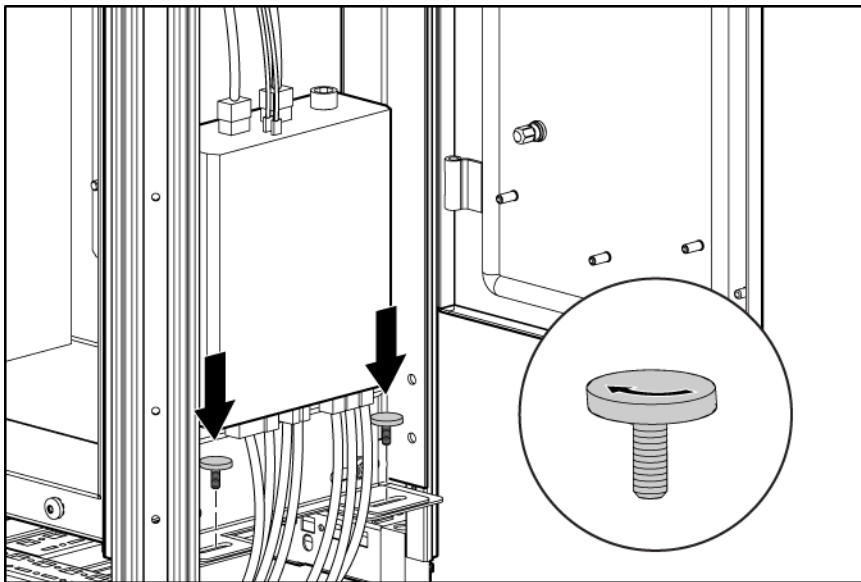
1. Slide the water controller onto the water controller mounting bracket.



2. Connect each cable to the appropriate connectors on the water controller, according to the label on each cable.



3. Replace the water controller base.
4. Replace the water deflecting plate.
5. Insert two thumbscrews to secure the water controller to the mounting bracket and base.



6. Reconnect the power cables ("[Reconnecting the power](#)" on page [73](#)).
7. Complete the operation checklist (on page [73](#)).

Water level sensors

The water level sensors are a component of the water group located at the bottom of the MCS G2 unit.

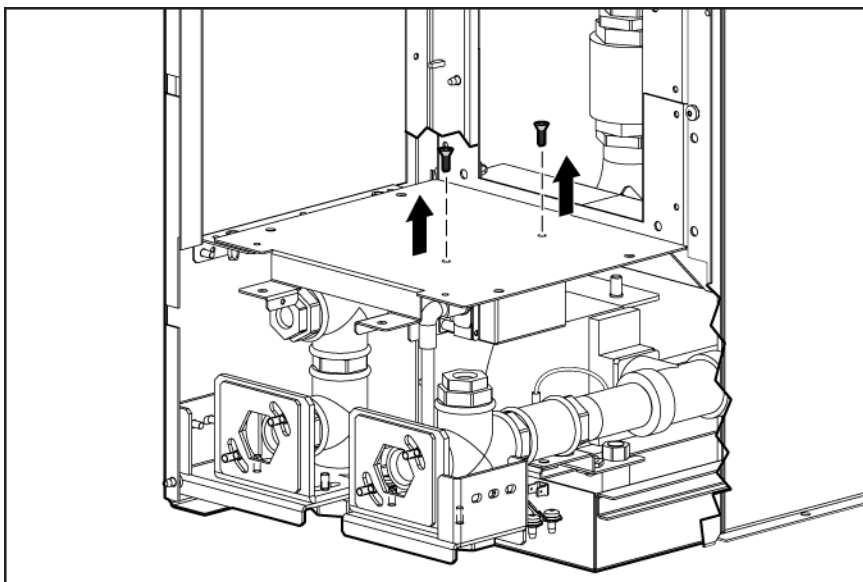


The following tools are required for installation:

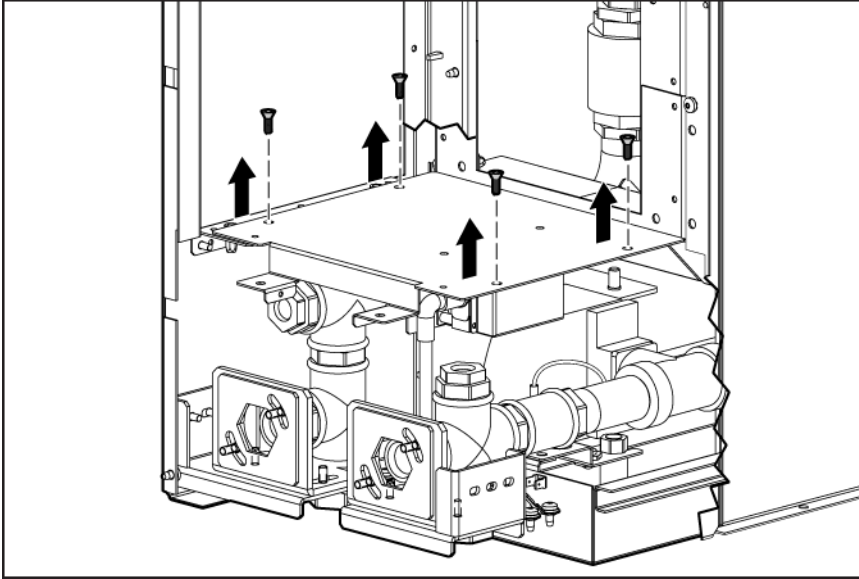
- T-25 Torx driver

Removing the water level sensors

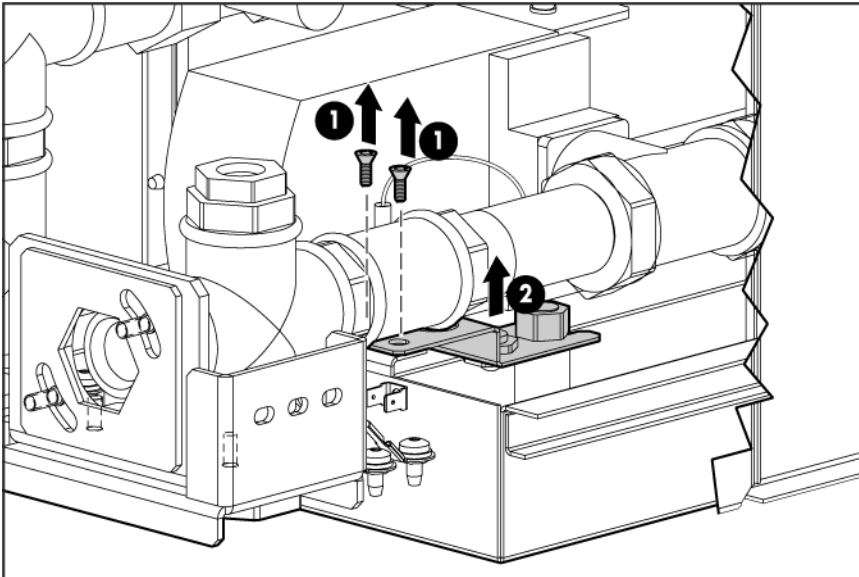
1. Disconnect the power ("[Disconnecting the power](#)" on page 23).
2. Remove the water controller ("[Removing the water controller](#)" on page 57).
3. Remove the bottom fan unit ("[Removing the bottom fan unit](#)" on page 29).
4. Remove the water group cover.
 - a. Using a T-25 Torx driver, remove the two flathead T-25 Torx screws that secure the condensation pump.



- b. Using a T-25 Torx driver, remove the four T-25 Torx screws at each corner that secure the water group cover to the MCS G2 unit.



5. Remove the condensation pump ("Removing the condensation pump" on page 30).
6. Using a T-25 Torx driver, remove the two T-25 sheet metal screws securing the sensor bracket to the MCS G2 unit (1).
7. Remove the sensor bracket and attached water level sensors from the MCS G2 unit (2).

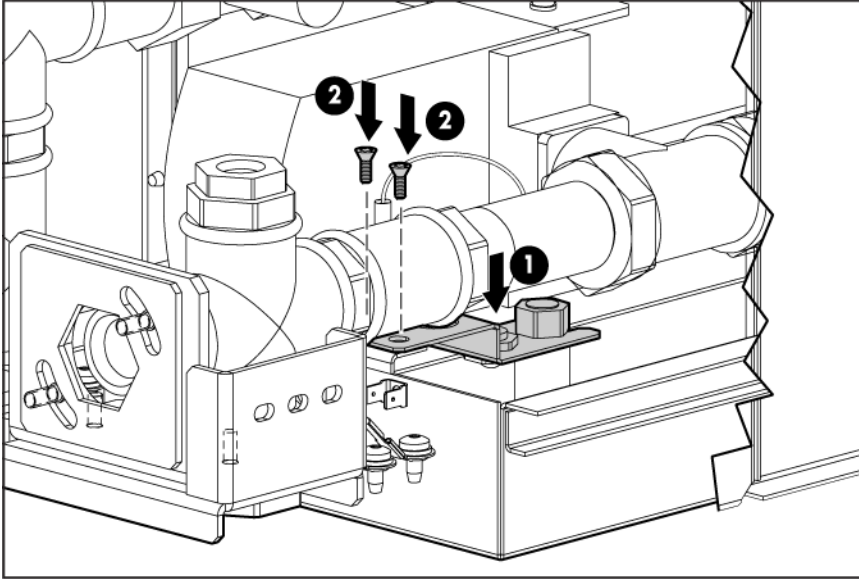


8. Remove the cable ties and unwrap the cable harness.
9. Disconnect the water level sensor cables from the water controller.

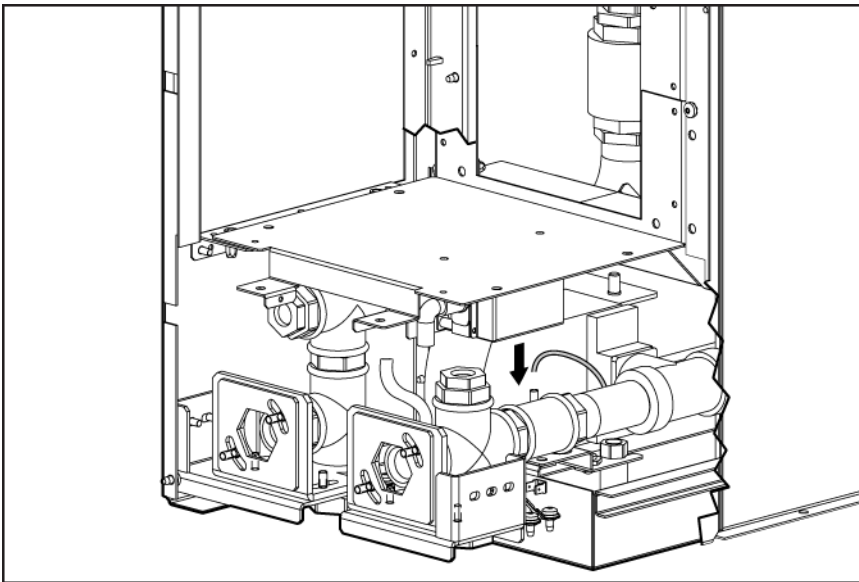
Replacing the water level sensors

1. Connect the water level sensor cable to the water controller.
2. Align the sensor bracket to the appropriate holes in the MCS G2 unit (1).

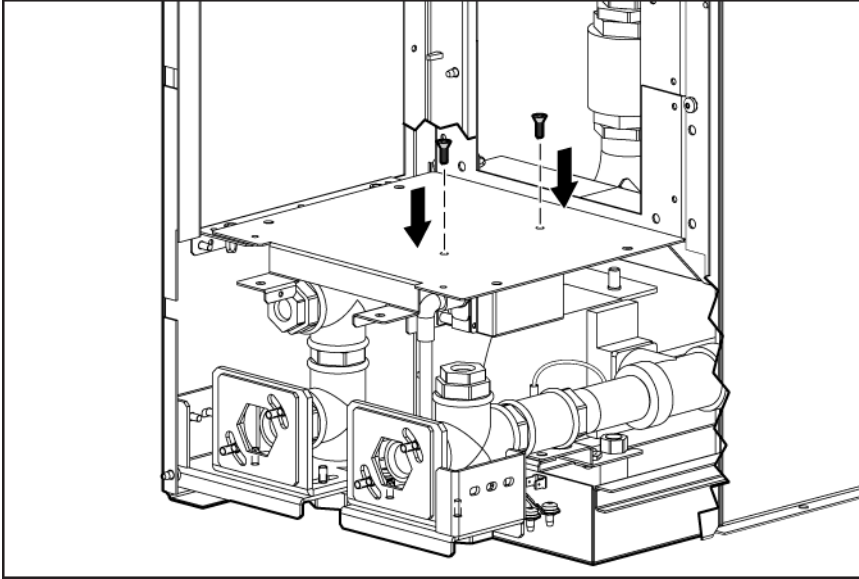
3. Using a T-25 Torx driver, insert and tighten two T-25 sheet metal screws to secure the sensor bracket to the MCS G2 unit (2).



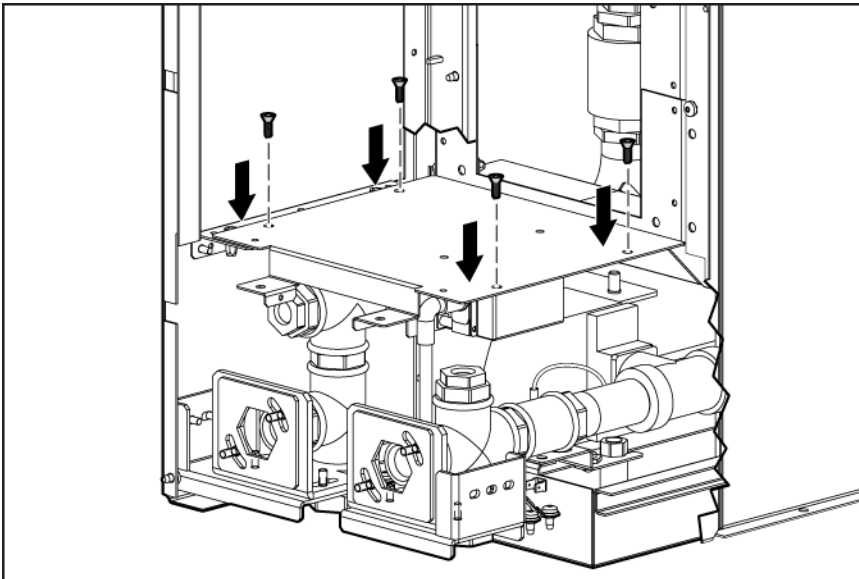
4. Replace the cable ties and cable harness to secure loose cables.
5. Replace the condensation pump ("[Replacing the condensation pump](#)" on page 32).
6. Replace the water group cover.



- a. Using a T-25 Torx driver, insert and tighten the two flathead T-25 Torx screws into the condensation pump.



- b. Using a T-25 Torx driver, insert and tighten the four T-25 Torx screws into each corner of the water group cover.



- 7. Replace the bottom fan unit ("[Replacing the bottom fan unit](#)" on page 29).
- 8. Replace the water controller ("[Replacing the water controller](#)" on page 59).
- 9. Reconnect the power cables ("[Reconnecting the power](#)" on page 73).
- 10. Complete the operation checklist (on page 73).

Water valve

The water valve is a component of the water group located at the bottom of the MCS G2 unit.



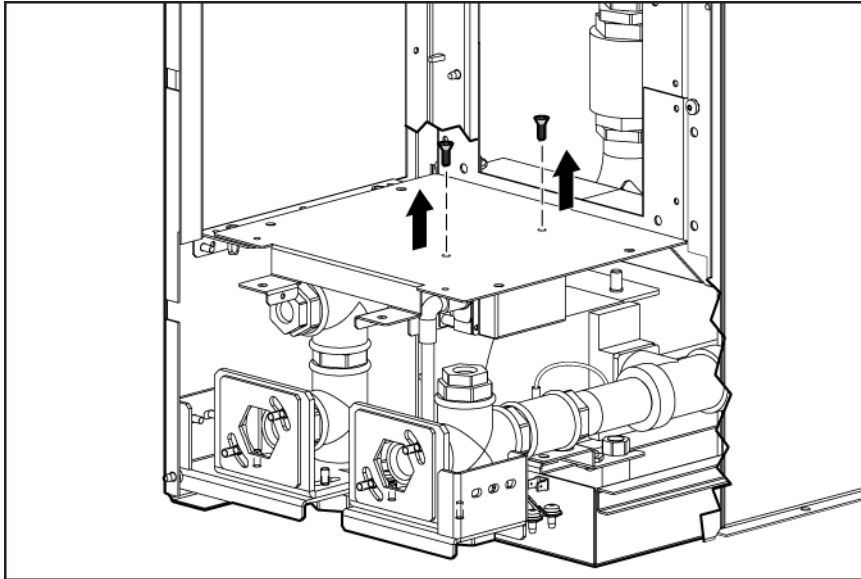
The following tools are required for installation:

- T-25 Torx driver
- Razor blade
- Pliers (included in the replacement kit)
- 8-mm socket or wrench

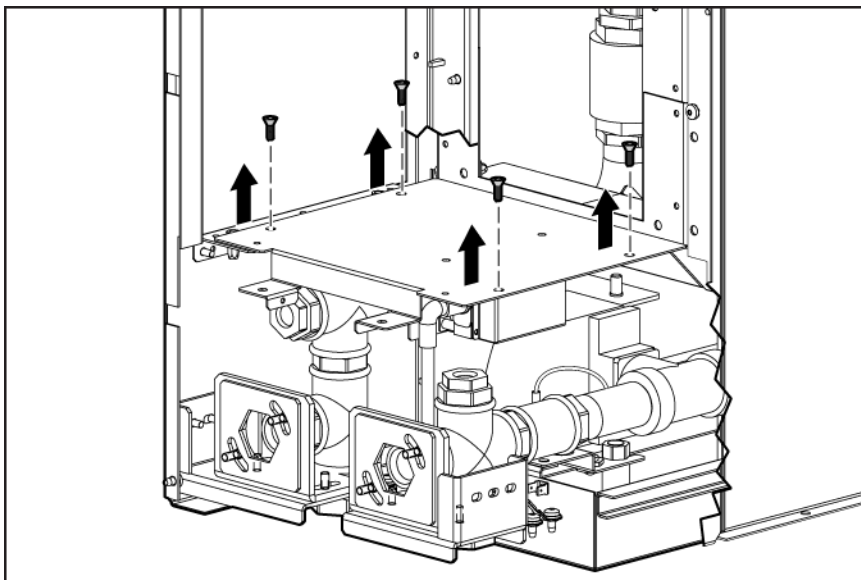
Removing the water valve

1. Disconnect the power ("[Disconnecting the power](#)" on page [23](#)).
2. Turn off the water ("[Turning off the water](#)" on page [24](#)).
3. Drain the water from the main inlet water hose ("[Draining water from the MCS G2 unit](#)" on page [24](#)).
4. Remove the water controller ("[Removing the water controller](#)" on page [57](#)).
5. Remove the bottom fan unit ("[Removing the bottom fan unit](#)" on page [29](#)).
6. Remove the water group cover.

- a. Using a T-25 Torx driver, remove the two flathead T-25 Torx screws that secure the condensation pump.

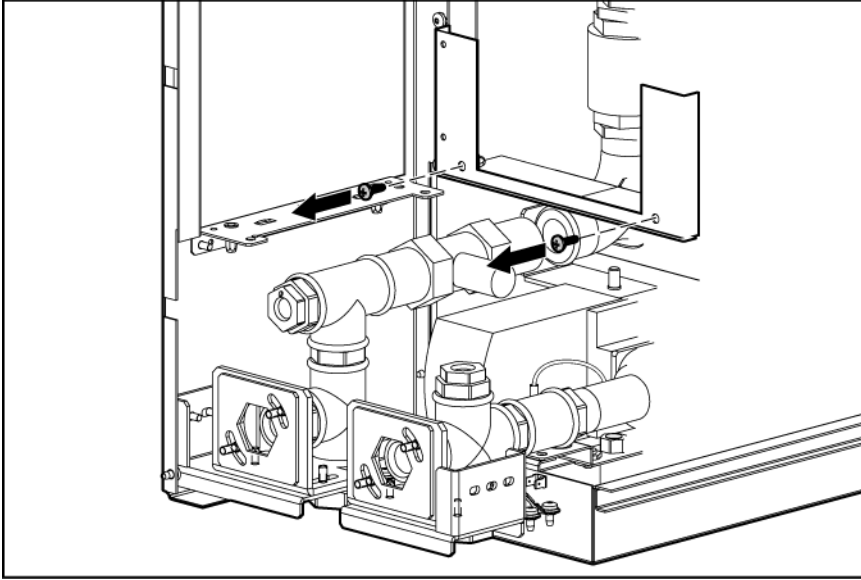


- b. Using a T-25 Torx driver, remove the four T-25 Torx screws at each corner that secure the water group cover to the MCS G2 unit.

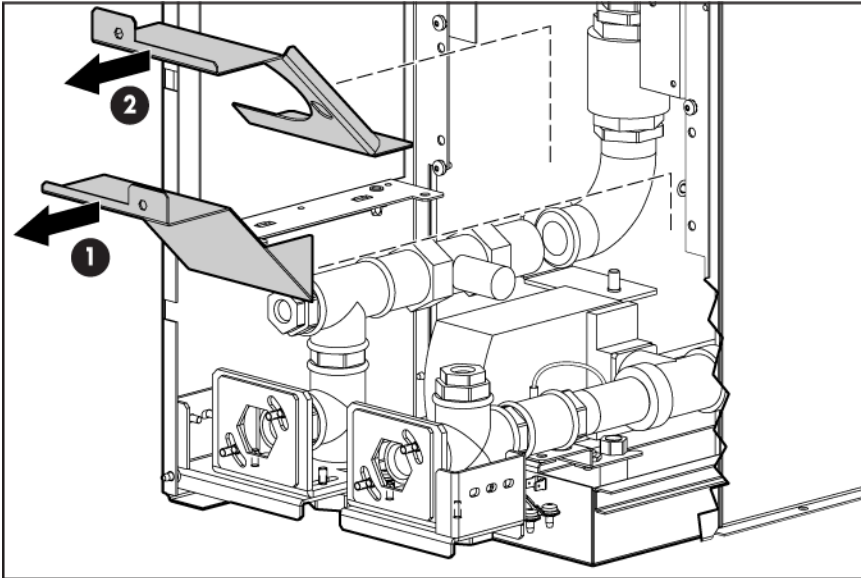


- 7. Remove the condensation pump ("[Removing the condensation pump](#)" on page 30).
- 8. Remove the sheet metal bulkhead.

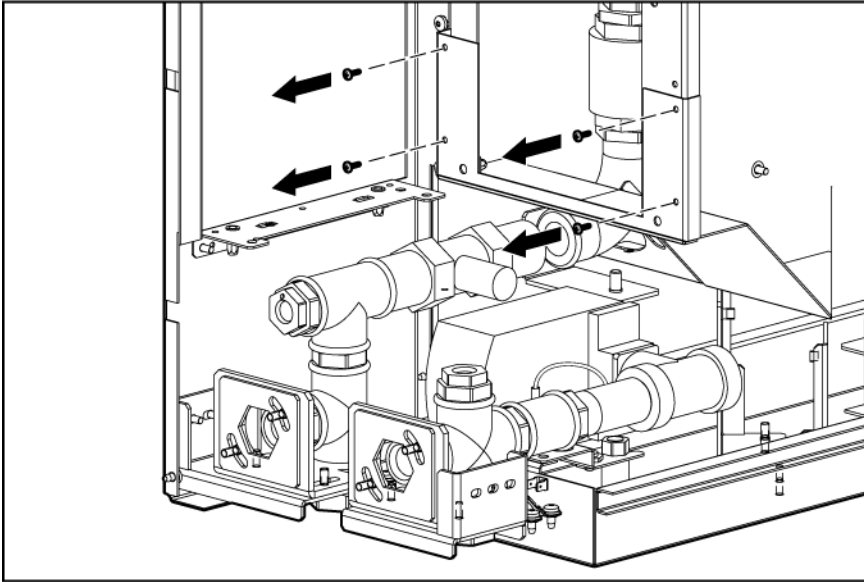
- a. Using a T-25 Torx driver, remove the two machine screws at the two bottom corners of the frame.



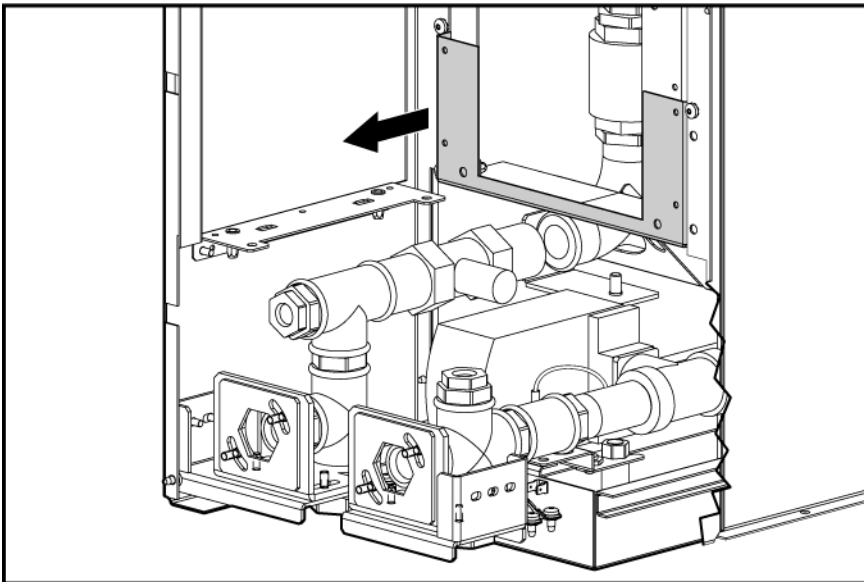
- b. Remove the two separate pieces of the frame from the MCS G2 unit.



- c. Using a T-25 Torx driver, remove the four sheet metal screws at each corner of the frame.

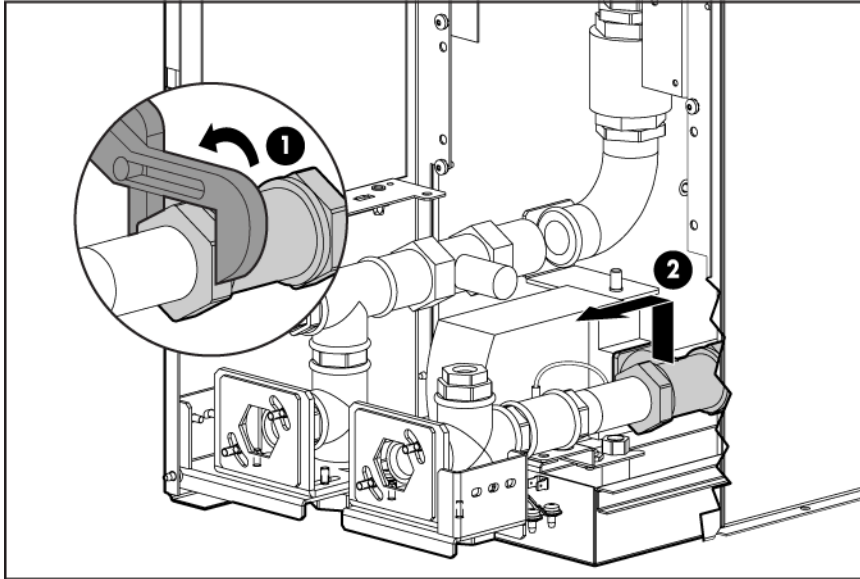


- d. Remove the frame support from the MCS G2 unit.



9. Using a razor blade, remove the insulation around the valve.
10. Disconnect the water valve cable from the water controller.
11. Using an 8-mm socket or wrench, loosen the clamping brackets.

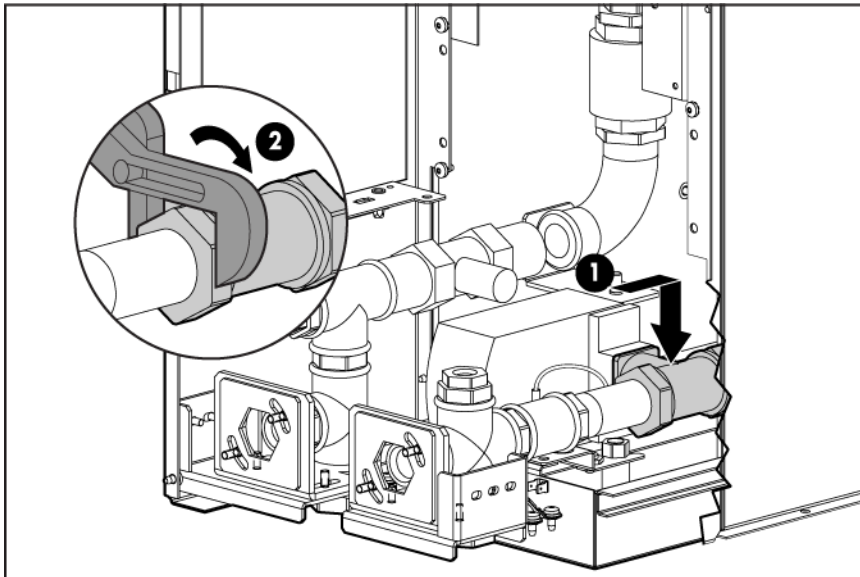
12. Using pliers, included in the replacement kit, loosen the two nuts on either side of the water valve.



13. Remove the water valve and two gaskets, one on either side of the water valve, from the MCS G2 unit.

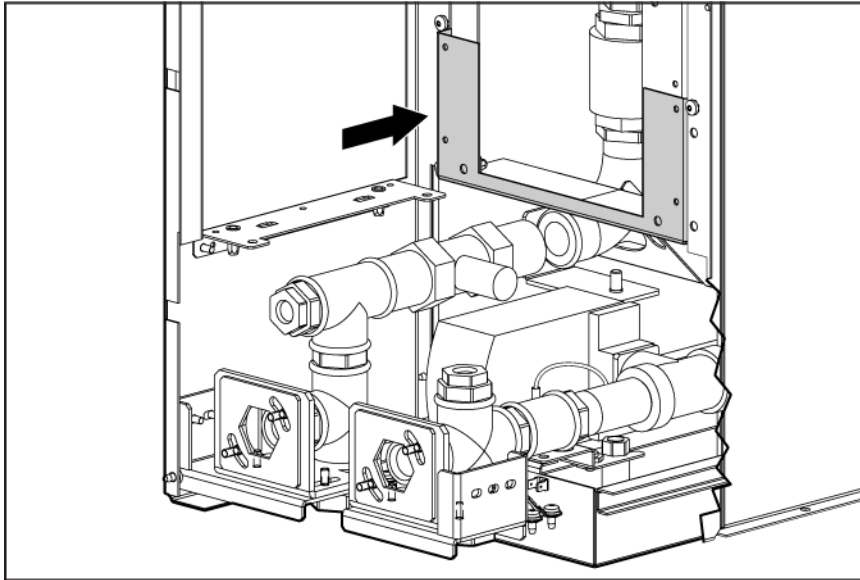
Replacing the water valve

1. Clean any remaining gasket debris from the two connecting flat-face coupling surfaces.
2. Align the water valve with the pipes in the MCS G2 unit.
3. Insert one gasket on either side of the valve, between the two nuts.
4. Using pliers, included in the replacement kit, tighten the two nuts on either side of the valve, securing the water valve to the pipe.

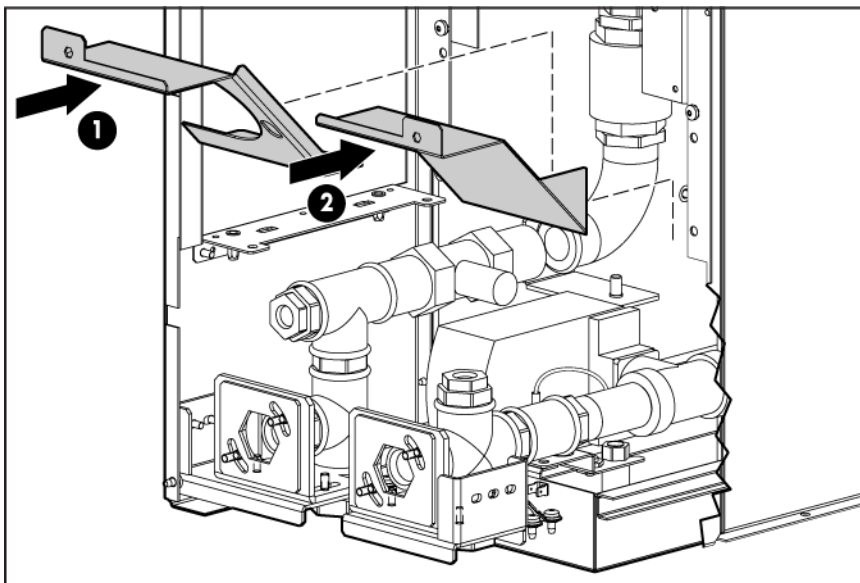


5. Reconnect the main inlet water hose ("[Reconnecting the main water hoses](#)" on page [73](#)).
6. Restore the water flow to the MCS G2 unit ("[Restoring water flow](#)" on page [74](#)).
7. Verify that there are no leaks. If a leak is found, tighten the nuts on either side of the valve.

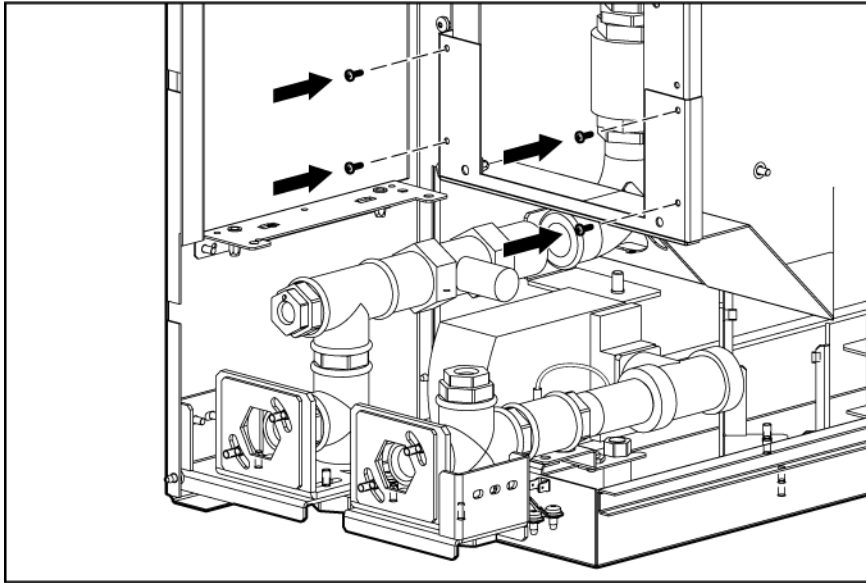
8. Route the water valve cable through the back of the MCS G2 unit.
9. Connect the water valve cable to the appropriate connector on the water controller.
10. Wrap the insulation you previously removed around the water valve, and secure using either electrical tape or a cable tie wrap.
11. Replace the sheet metal bulkhead.
 - a. Align the frame support to the appropriate holes in the MCS G2 unit.



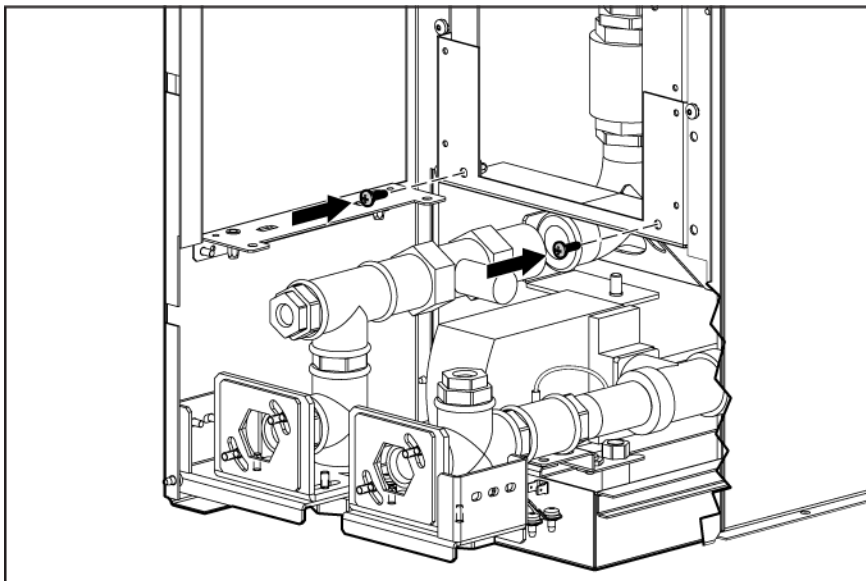
- b. Insert the two pieces of the frame into the MCS G2 unit, aligning them with the frame support.
 - i. Insert the left (return-side) piece of the frame, making sure it fits down around the large pipe. (1)
 - ii. Insert the right (supply-side) piece of the frame, slightly overlapping the left (return-side) piece of the frame. (2)



- c. Using a T-25 Torx driver, insert and tighten four sheet metal screws, one in each corner of the frame, securing the frame to the MCS G2 unit.

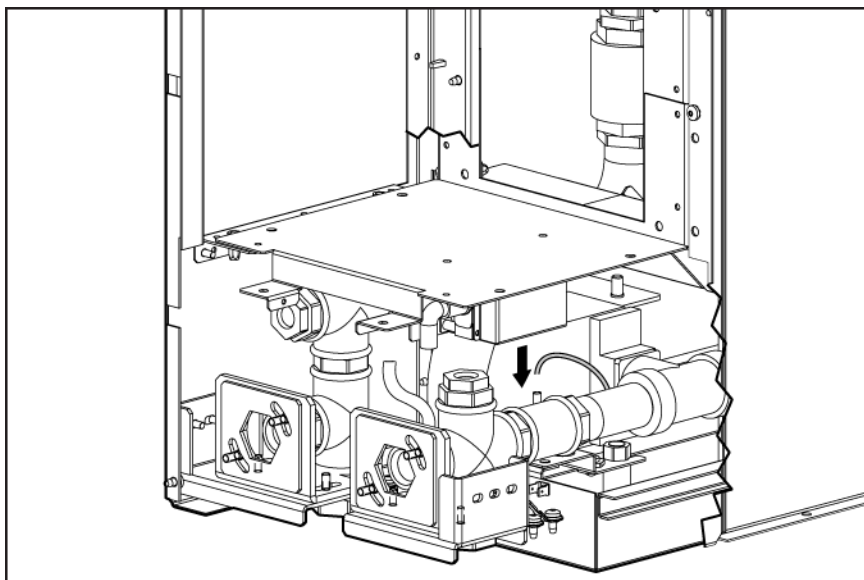


- d. Using a T-25 Torx driver, insert and tighten two machine screws in the bottom two corners of the sheet metal frame.

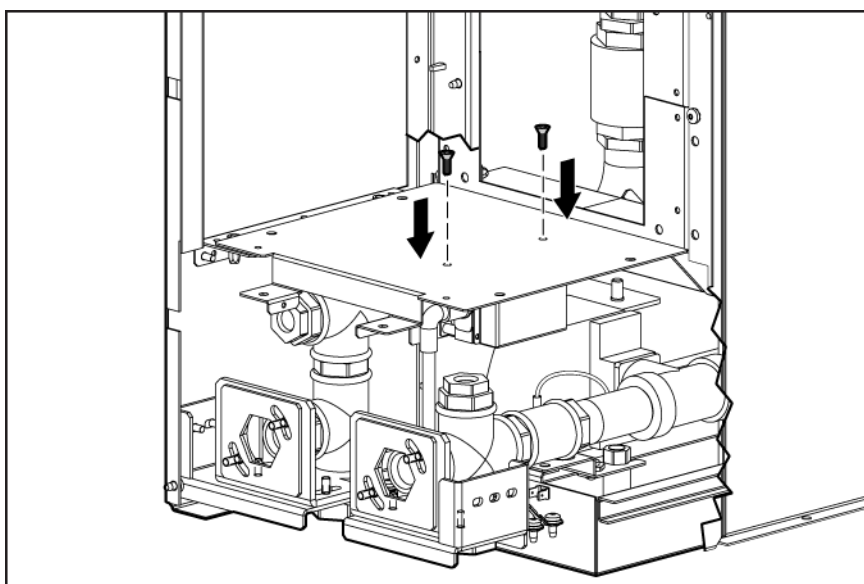


12. Replace the condensation pump ("[Replacing the condensation pump](#)" on page 32).

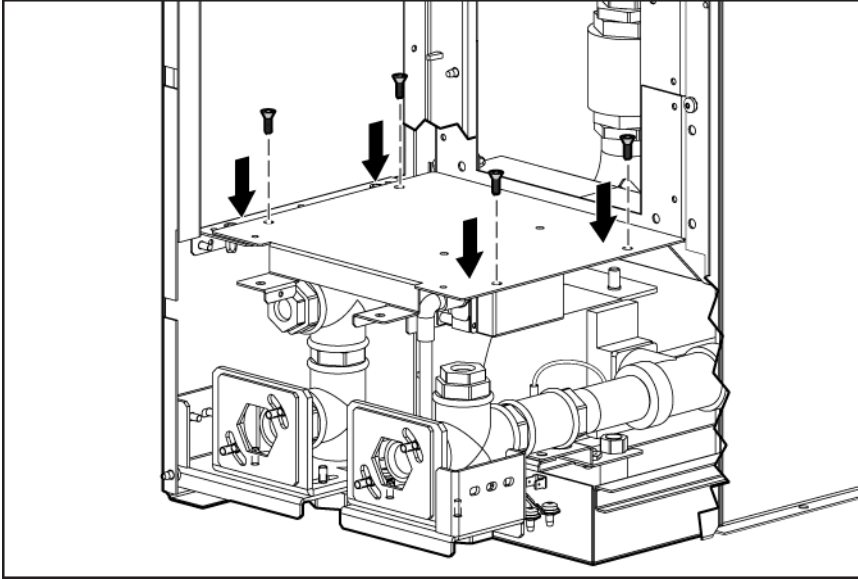
13. Replace the water group cover.



- a. Using a T-25 Torx driver, insert and tighten the two flathead T-25 Torx screws into the condensation pump.



- b. Using a T-25 Torx driver, insert and tighten the four T-25 Torx screws into each corner of the water group cover.



14. Replace the bottom fan unit ("[Replacing the bottom fan unit](#)" on page 29).
15. Replace the water controller ("[Replacing the water controller](#)" on page 59).
16. Reconnect the power cables ("[Reconnecting the power](#)" on page 73).
17. Complete the operation checklist (on page 73).

Operation checklist

1. If you drained the water from either main hose, reconnect the hoses to the facility water line connection. ("[Reconnecting the main water hoses](#)" on page 73)
2. If you disconnected the power, reconnect the power cables ("[Reconnecting the power](#)" on page 73).
3. If you shut off the water flowing into the MCS G2 unit, restore water flow to the MCS G2 unit ("[Restoring water flow](#)" on page 74).
4. Close all MCS G2 unit doors and connecting rack doors.
5. Clear all old logs from the web interface to ensure that any additional alarms are current.
6. Confirm that no additional warning or alarm messages have been detected by looking at the operator display.

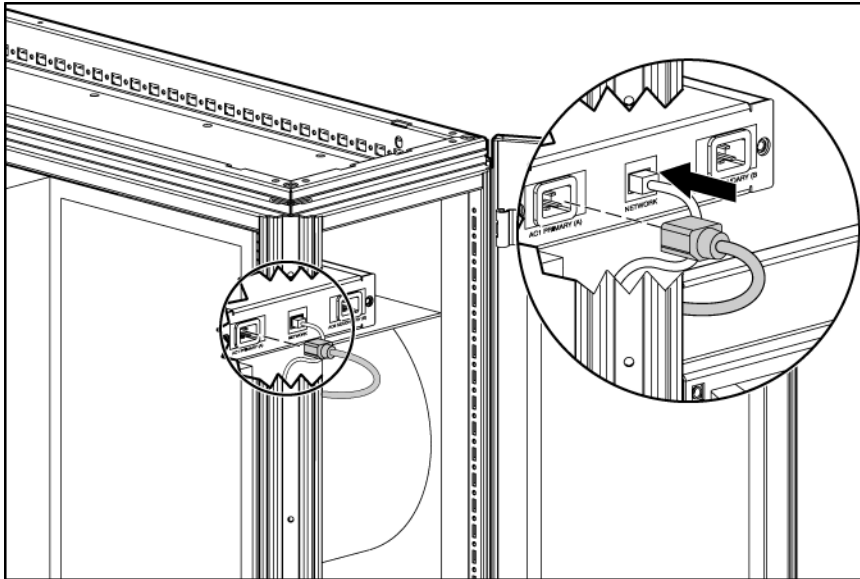
Reconnecting the main water hoses

1. Reconnect the hoses to the facility water line connection, and tighten.
2. Verify that there are no leaks.

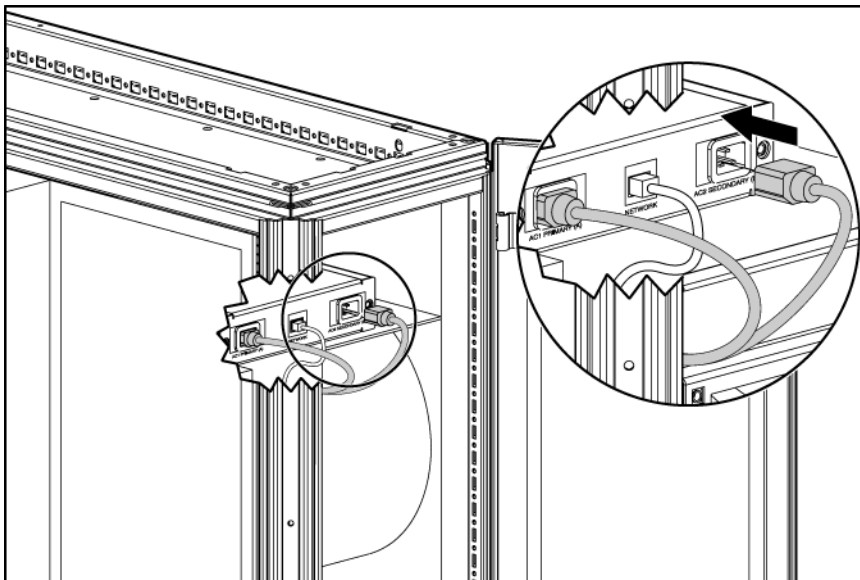
Reconnecting the power

1. Open the rear MCS G2 unit door.
2. Connect the two AC power cables to the power inlet box.

- a. Connect the primary power cable.



- b. Connect the secondary power cable.



Restoring water flow

If water was disconnected, restore water flow to the MCS unit at the facility-side valve.

Maintenance

Maintenance and service

For information on maintenance and service, refer to the HP website (<http://www.hp.com>).

Air and water heat exchanger maintenance

The air and water heat exchanger requires no maintenance. If particulates are present in the cooling water, a filter must be fitted immediately upstream from the water inlet fittings. Check the functionality of the condensation drainage system regularly. Regularly perform visual inspections for leaks (annually).

Water quality requirements and specifications

Closed-loop water must not contain any lime scale deposits or loose debris. The water should have a low level of hardness, particularly a low level of carbon hardness. Filters must be used to remove free floating particulates and be regularly maintained. Additionally, the water must not be so soft that it attacks the materials with which it comes into contact. It is necessary to periodically add new fresh water, but also to remove some enriched water. A #30 mesh filter is recommended for filtering water entering the HP MCS, and a 1 μ m filter is suggested for prolonged performance.

Also consider the required set point for the water temperature. Temperatures near or below 0°C (32°F) mean that the chilled water plant condenser is very close to or below the freezing point of the water. The chilled water temperature to be supplied to the MCS G2 unit is 5°C (41°F). Freezing water can cause a blockage and damage to the unit. So, an additive, such as glycol, might be necessary to lower the freezing point. However, the heat transfer potential of the water is lower, so the equipment must be derated properly.

In a cooling loop, metallic materials in a pipe distribution network are in constant contact with recirculating liquid and can react with impurities to cause corrosion that can develop into leaks or form deposits and blockages.

The rate of galvanic corrosion depends on the electrical potential between the two dissimilar metals and the temperature of the liquid.

A 10 degree increase in water temperature can double the rate of corrosion.

For more information, see the *HP Modular Cooling System G2 Site Preparation Guide* on the HP website (<http://www.hp.com>).

Acceptable water quality specifications

The following values are water quality ranges required for continuous quality of performance:

Parameter	Range
pH	8.0–10

Parameter	Range
Specific conductance at 25°C (77°F)	10–2500 μ mhos
Alkalinity ("M" as CaCO ₃)	150–1000 ppm
Sulfur (SO ₄)	0–150 ppm
Chloride (Cl)	0–100 ppm
Hardness (CaCO ₃)	0–350 ppm
Calcium hardness (CaCO ₃)	0–200 ppm
Magnesium hardness (CaCO ₃)	0–150 ppm
Copper (Cu)	< 0.20 ppm
Iron (Fe)	< 3.0 ppm
Aluminum (Al)	< 0.50 ppm
Sodium (Na)	0–1000 ppm
Silica (SiO ₂)	0–150 ppm
Zinc (Zn)	< 1.0 ppm
Manganese (Mn)	< 0.1 ppm
Phosphate Ortho- (Po ₄)	< 3 ppm
Bacteria	< 1000 CFU/ml
Suspended solids	< 10 ppm

If your water is out of range, consult a water quality expert.

HP recommends using particulate filtration on the dedicated water supply system connected to the HP Modular Cooling System G2 unit.

Frost damage

To avoid frost damage, the water temperature must not be allowed to fall below the minimum permissible temperature of +4 °C (+39.2 °F) at any point in the water cycle.

Before storage or transportation at sub-zero temperatures, the water cycle must be drained completely using compressed air. Avoid setting the target temperature lower than is necessary because the danger of falling below the dew point increases as water temperature decreases (condensation buildup). Ensure that the enclosure is sealed on all sides, and in particular at the cable inlet (condensation formation).

Water precautions

Take the following precautions during the installation of the MCS G2 unit:

- Before installing the HP Modular Cooling System G2 Hook-Up Kit, ensure that all foreign matter and particulates are flushed from the system.
- Evaluate the short-term and long-term system requirements against the available water capacity.
- Ensure that the chilled water loop is properly designed for liquid cooling systems and is separate from the sanitary water systems in your building (bathroom, sink, drinking water, and so on).

- Ensure facility managers understand the additional load being added to the chilled water supply of the building. Be aware that the added heat load might affect other components being cooled by the chilled water plant.

Plumbing materials to avoid

Do not use the following materials in a closed water system:

- Oxidizing biocides
- Aluminum components
- Brass components with high levels of zinc
- Non-stainless steel Iron components

Condensation management

Any condensation that forms is collected in each individual cooling module and is taken through a discharge tube to a condensation tray integrated in the base assembly. Where multiple cooling modules are used, the condensate discharge tubes are connected to one another using quick connectors. Any condensation that occurs is then removed through this series of connections to the condensation tray.

When the specified condensation level in the condensation tray is reached, a sensor activates a pump that pumps the condensation into the return system. A further discharge tube runs out of the system from condensation tray to drain excess fluid if needed. This hose should be connected to a collection system or an external drain.

To ensure reliable drainage:

- Ensure no kinks form in the drainage hose.
- Do not reduce diameter of drainage hose.
- Route the drainage hoses so that they always run downhill.

To avoid excessive buildup of condensate and to conserve energy, consider raising the cooling water temperature to the necessary cooling capacity.

Diagnostic tools

For a complete list of the warning and alarm messages displayed on the operator display and the web interface, see the *HP Modular Cooling System User Guide*, included with your original MCS unit.

Troubleshooting

HP Modular Cooling System troubleshooting

Issue	Resolution
The water flow is low or not flowing.	For more information, see the "Temperature Control settings" section in the <i>HP Modular Cooling System Web Interface User Guide</i> located on the Documentation CD included with this product.
The fan speed is too low.	For more information, see the "Cooling performance parameters" section in the <i>HP Modular Cooling System Web Interface User Guide</i> located on the Documentation CD included with this product.
The fan speed is too high.	For more information, see the "Cooling performance parameters" section in the <i>HP Modular Cooling System Web Interface User Guide</i> located on the Documentation CD included with this product.
The average server intake temperature (air going to the servers) is too high.	For more information, see the "Cooling performance parameters" section in the <i>HP Modular Cooling System Web Interface User Guide</i> located on the Documentation CD included with this product.
The average server intake temperature (air going to the servers) is too low.	For more information, see the "Cooling performance parameters" section in the <i>HP Modular Cooling System Web Interface User Guide</i> located on the Documentation CD included with this product.
The average exhaust temperature (air coming out of the servers) is too high.	For more information, see the "Cooling performance parameters" section in the <i>HP Modular Cooling System Web Interface User Guide</i> located on the Documentation CD included with this product.
The average exhaust temperature (air coming out of the servers) is too low.	For more information, see the "Cooling performance parameters" section in the <i>HP Modular Cooling System Web Interface User Guide</i> located on the Documentation CD included with this product.
The settings that have been modified through the web interface are not accepted, and the management module LED is blinking red, yellow, or green.	Press and hold the management module C key for five seconds to confirm these settings.
The measurement readings on the management module display or web interface seem to be incorrect, and the management module LED is blinking red, yellow, or green.	Press and hold the management module C key for five seconds to confirm these settings.
The heat exchanger unit stops operating correctly.	Remove the corresponding fan unit to keep the Automatic Door Release Kit from holding the rack doors open.

Specifications

MCS specifications

Item	Specification
Voltage	208–240 VAC +/- 10%, 50–60 Hz
Maximum Height (including the rack)	200 cm (78.7 in)
Maximum Width (including the rack)	90.9 cm (35.8 in) maximum
Maximum Depth (including the rack and rack handle)	127 cm (50 in)
Maximum Shipping Height (on skid)	224.8 cm (88.5 in)
Maximum Shipping Width (on skid)	122 cm (48 in)
Maximum Shipping Depth (on skid)	177.8 cm (70 in)
Maximum Depth with Rear Extension Kit installed	142.5 cm (56.1 in)
Net Weight (including the empty rack)	540 kg (1190 lb)
Shipping Weight (gross with packaging)	621.4 kg (1370 lb)
Effective cooling with 60 l/min (15.8 gal/min) water supply at 7°C, cold air at 25°C	35 kW
Rated current maximum	208 VAC–15 Amps
Cooling medium	water
Minimum recommended water inlet temperature	7°C (45°F)
Permissible operating pressure pmax	100 psi

Thermal and air flow performance

Maximum thermal and air flow performance parameters	Single rack	Dual rack (Specification per rack)
Air temperature—inlet to rack-mounted components	25°C (68°F)	25°C (68°F)
Chilled water temperature	7°–15°C (45°–57°F)	7°–15°C (45°–57°F)
Total rack-mounted component air flow	2,600 cfm or less at 0 or more pressure drop across the rack-mounted components	1,300 cfm or less at 0 or more pressure drop across the rack-mounted components
Chilled water flow rate	15.5 gal/min (60 l/min)	7.9 gal/min (30 l/min)
Chilled water pressure differential at flow needed to meet thermal specifications	1.0 bar delta pressure	1.0 bar delta pressure
Heat lost to room	Approximately 10% maximum depending on the MCS settings and room temperature	Approximately 10% maximum depending on the MCS settings and room temperature
Server heat load	35 kW maximum	17.5 kW maximum

Environmental specifications

Features	Specifications
Operating temperature	5°C to 35°C (41°F to 95°F)
Non-operating temperature	0°C to 60°C (32°F to 140°F)
Transit temperature	-30°C to 60°C (-22°F to 140°F), up to 72 hours
Storage temperature	-20°C to 60°C (-4°F to 140°F)
Operating humidity	20 to 80% relative humidity (non-condensing)
Non-operating humidity	5 to 95% relative humidity (non-condensing)
Operating altitude	-76.2 to 3,048 m (-250 to 10,000 ft)
Non-operating altitude	-76.2 to 9,144 m (-250 to 30,000 ft)

HP 10642 G2 Rack specifications

U height	Width	Depth	Dynamic load (gross)	Static load
42U	600 mm (23.8 in)	1,000 mm (39.4 in)	907.2 kg (2,000 lb)	1,360.8 kg (3,000 lb)

Acronyms and abbreviations

CSR

Customer Self Repair

HEX

heat exchanger

HTTP

hypertext transfer protocol

MCS

modular cooling system

MCS G2

modular cooling system generation 2

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